



January 31, 2021

Via Sharefile

Ms. Julia Galayda
Bureau of Case Management
New Jersey Department of Environmental Protection
401 East State Street
PO Box 28
Trenton, New Jersey 08625-0028

**Re: Semi-Annual Groundwater Monitoring Report (July-December 2020)
 Hess Corporation – Former Port Reading Complex (HC-PR)
 750 Cliff Road
 Port Reading, Middlesex County, New Jersey**

Dear Ms. Galayda:

Enclosed please find the December 2020 Semi-Annual Groundwater Monitoring Report for the above referenced facility's North Landfarm, South Landfarm, and No. 1 Landfarm. This report was prepared by Earth Systems, Inc. on behalf of Hess Corporation, and presents the results of the monitoring and sampling events conducted in July and October 2020. The next monitoring and sampling events will be conducted in January and April 2021, with the results presented in the July 2021 report.

Should you have any questions or comments relating to this report, please call me at 732-739-6444. I can also be reached via e-mail at ablake@earthsys.net. If you have any questions relating to the project and schedule moving forward, you can also contact Mr. John Schenkewitz of Hess Corporation at 609-406-3969.

Sincerely,
Earth Systems, Inc.

A handwritten signature in blue ink that reads "Amy Blake". The signature is fluid and cursive, with a long horizontal line extending from the end.

Amy Blake
Senior Project Manager

cc: Mr. Andy Park – USEPA Region II (electronic copy)
 Mr. John Schenkewitz – Hess Corporation (electronic copy)
 Mr. Rick Ofsanko – Earth Systems, Inc. (electronic copy)
 Mr. John Virgie – Earth Systems, Inc. (electronic copy)

SEMI-ANNUAL GROUNDWATER MONITORING REPORT
HESS CORPORATION - FORMER PORT READING COMPLEX
NORTH LANDFARM, SOUTH LANDFARM, AND NO.1 LANDFARM

July – December 2020

Hess Corporation – Former Port Reading Complex
750 Cliff Road
Port Reading, Middlesex County New Jersey

January 2021

Prepared for:



Hess Corporation

*Trenton-Mercer Airport
601 Jack Stephan Way
West Trenton, New Jersey 08628*

Prepared by:



*1625 Highway 71
Belmar, New Jersey 07719*

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1.0 Introduction and Summary Table

Earth Systems, Inc. (Earth Systems) has been retained by Hess Corporation (Hess) to provide environmental consulting services for the Hess Corporation – Former Port Reading Complex (HC-PR) facility located at 750 Cliff Road in Port Reading (Woodbridge Township), Middlesex County, New Jersey. A United States Geological Survey (USGS) 7.5-minute series quadrangle map (Arthur Kill, New Jersey) depicting the site location, facility and associated land features is included as **Figure 1**. A Site Plan has been included as **Figure 2**.

This report documents the groundwater monitoring activities completed in third and fourth quarters of 2020 for the North Landfarm, South Landfarm, and No. 1 Landfarm.

SUMMARY OF ACTIONS

Location	Case Number/ Description	Description and Dates of Action
AOC-1	North Landfarm	Quarterly Groundwater Monitoring Events – July & October 2020
AOC-2	South Landfarm	Quarterly Groundwater Monitoring Events – July & October 2020
AOC-3	No. 1 Landfarm	Quarterly Groundwater Monitoring Events – July & October 2020 Leachate Sampling Event –December 2020

2.0 North Landfarm

2.1 Historic Information

The United States Environmental Protection Agency (US EPA) issued a Hazardous and Solid Waste Amendments (HSWA) Permit (No. NJD045445483) for the Port Reading facility effective May 1, 1988. The HSWA Permit requires the nature, extent, and rate of migration be determined for hazardous waste or hazardous constituents in soils, groundwater, and sediment at any solid waste management unit (SWMU).

On November 14, 1995, HC-PR was informed, via New Jersey Department of Environmental Protection (NJDEP) correspondence, that the Bureau of Federal Case Management (BFCM) would assume oversight of the North and South Landfarms in addition to other applicable areas of concern.

The North Landfarm operated from 1975 to October 24, 1985, receiving Interim Status in 1980. As part of the USEPA permitting process and the Discharge to Groundwater permitting process under the New Jersey Pollutant Discharge Elimination System (NJPDES) for the facility, HC-PR elected to close the North Landfarm.

The North Landfarm is located in the northern portion of the facility. It is bound on the west and north by the earthen retention dike of Tank 7945 and on the east and south by a dike system built to retain run-off from the Landfarm. The surface area of the North Landfarm is approximately one-third of an acre. The Landfarm is underlain by dredged fill and native marsh soils containing silt and clay.

The North Landfarm formerly treated 2 listed hazardous waste streams, API Separator Sludge (K051) and Leaded Tank Bottoms (K052). The total volume of waste applied to the North Landfarm from 1978 until October 24, 1985 was estimated at 21 tons. The quantity of hazardous waste applied to the Landfarm during this period was estimated at 15 tons. Non-hazardous biomass was applied to the Landfarm until approximately 1988.

2.2 Site Specific Geology and Hydrogeology

The North Landfarm is situated upon approximately 8 feet of dredge fill material from the Arthur Kill. The source of the dredge fill is from the deepening of the Arthur Kill and consists of reddish-brown sands with clay and silt. Underlying this fill layer is a layer that consists of predominately-clayey silt and organic matter. This layer gradually transitions to an organic fibrous material (peat) zone with silty clay. The peat layer starts at approximately 10 feet below ground surface (bgs).

The general flow of the unconfined groundwater beneath the North Landfarm is to the northeast. The waters from the upper unconfined aquifer merge with the North Drainage Ditch. The North Drainage Ditch trends northwest to southeast and connects to the Arthur Kill approximately 2,100 feet southeast of the Landfarm.

The normal daily tide elevations in the Arthur Kill range from a low tide of about -2.3 feet below the National Geodetic Vertical Datum (NGVD) of 1929 to a high tide of +4.3 feet above NGVD. At typical high tide, the North Drainage Ditch fills with water and at low tide the ditch is typically dry. There is no significant westward flow of water at high tide and no significant outward flow of water at low tide.

The North Landfarm is surrounded by diked containment walls, which prevent the discharge of Landfarm surface water. A groundwater monitoring well network has been established for the North Landfarm to monitor potential releases of constituents from the Landfarm. These wells are monitored, sampled, and analyzed on a quarterly basis in accordance with the NJPDES permit. The most recent analytical results are presented below.

2.3 Hydraulic Monitoring Results

On July 10 and October 5, 2020, depth to water measurements were collected from the North Landfarm monitoring wells LN-1 through LN-7. Groundwater elevation contour data from the July and October 2020 monitoring events are summarized in **Table 1**.

Groundwater flow direction, as depicted on the groundwater contour maps (**Figures 3 & 4**), is generally toward the north and northeast, which is consistent with historic observations.

2.4 Groundwater Monitoring

On July 14, as well as October 6, 2020, groundwater samples and field parameters were collected using a Horiba U52 water quality meter. The parameters included temperature, conductivity, dissolved oxygen, turbidity, redox potential, and pH. Groundwater elevation measurements were collected utilizing a Solinst oil/water interface probe, accurate to one hundredth of a foot. Groundwater monitoring records are included in **Appendix A**.

Prior to groundwater purging, the pump intake depth placement was determined by water level, screen depth, and contaminants of concern. The contaminants of concern for the landfarms are petroleum related compounds. Therefore, the appropriate sampling interval is the top of the groundwater column and the pump was placed in the top 2 feet of the saturated screen. The depth of the pump was recorded on the low-flow field worksheets. These field worksheets are included in **Appendix A**. Groundwater purging was conducted at each well utilizing a Monsoon submersible pump with Teflon-lined ¼ inch polyethylene tubing. Groundwater field parameters were collected using a Horiba U-52 water quality meter and flow cell. The Horiba U-52 was calibrated by both the rental company as well as by field personnel. The Horiba was calibrated in accordance with the manufacturer's instructions and in accordance with Earth Systems' Standard Operating Procedures. All calibration documentation is included in **Appendix A**. The field parameters which were monitored include temperature, conductivity, dissolved oxygen, turbidity, redox potential, and pH. Groundwater elevation measurements were collected utilizing a Solinst oil/water interface probe. Groundwater elevations were recorded prior to pump placement and continuously during well purging. The total depth of the well was measured either 48 hours prior to well sampling or at the conclusion of well sampling to prevent disturbing any sediment present at the base of the well prior to sampling. During well purging, the monitored parameters were measured every 5 minutes until 3 consecutive stable readings were recorded. In accordance with the Field Sampling Procedures Manual (FSPM) Section 6.9.2.2.5.2, the following values were utilized to determine stability for the monitored parameters:

- pH +/- 0.1 unit
- Specific Conductance +/- 3%
- Temperature +/- 3%
- Dissolved Oxygen +/- 10%
- Turbidity +/- 10% for values greater than 1 NTU
- ORP +/- 10 millivolts
- Water level drawdown <0.3 feet

The parameter readings and the water level drawdown were recorded on the low-flow field worksheets. Any variances were also recorded on the low-flow stabilization sheets.

Groundwater monitoring records, which include low-flow field worksheets and calibration information, are included in **Appendix A**.

Prior to and at the completion of groundwater sampling of each monitoring well, the Horiba U-52 water quality meter, flow cell, and submersible pump were properly decontaminated using Alconox and a distilled or deionized water rinse. Tubing was discarded after the sampling of each well and was not reused.

Following well water purging and stabilization, groundwater samples were collected and placed into laboratory provided containers. All groundwater samples were collected directly from the tubing, once disconnected from the flow cell. All samples were appropriately labeled, logged, and placed into a cooler with ice prior to submittal to the laboratory. Quality control samples, including trip blanks and field blanks, were collected and submitted for analysis to evaluate the potential for cross contamination.

Groundwater samples were collected from monitoring wells LN-1 through LN-7 on July 14, 2020 and October 6, 2020. SGS-Accutest Laboratories (SGS) of Dayton, New Jersey (NJ NELAP Certification No. 12129) provided the analytical services.

2.5 Groundwater Analytical Results – July 2020

On July 14, 2020, monitoring wells LN-1 through LN-7 were sampled and analyzed for select volatile organic compounds (VOCs), metals, pesticides and various wet chemistry parameters as specified in the October 24, 1984 Draft Interim NJPDES Permit #0028878. The results of the July 2020 North Landfarm groundwater sampling event are summarized in **Table 2**.

Targeted VOCs and pesticides were not detected above the Groundwater Quality Standards (GWQS) in the groundwater samples collected from monitoring wells LN-1 through LN-7.

Select metals were detected at concentrations above the GWQS in groundwater samples collected from all monitoring wells. General chemistry parameters were also detected above the GWQS in all groundwater samples, excluding the groundwater samples collected from wells LN-2 and LN-5. The following table summarizes the metals and general chemistry laboratory results.

Client Sample ID:		NJ Groundwater Criteria (NJAC 7:9C 9/4/18)	LN-1	LN-2	LN-3	LN-4	LN-5	LN-6	LN-7
Lab Sample ID:			JD10090-3	JD10090-4	JD10090-5	JD10288-3	JD10288-4	JD10090-6	JD10090-7
Date Sampled:			7/14/2020	7/14/2020	7/14/2020	7/16/2020	7/16/2020	7/14/2020	7/14/2020
Matrix:			Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
Metals Analysis									
Arsenic	ug/l	3	ND (3.0)	4.6	8.2	16.5	3.9	9.8	5
Iron	ug/l	300	45100	25000	49600	44100	6010	41300	31300
Manganese	ug/l	50	913	339	837	869	42.8	920	725
Sodium	ug/l	50000	252000	89600	184000	581000	38100	144000	86800
General Chemistry									
Chloride	mg/l	250	321	158	208	1110	33	234	159
Nitrogen, Ammonia	mg/l	3	4.6	2.7	4.9	2.4	ND (0.20)	3.4	3.5
Solids, Total Dissolved	mg/l	500	830	374	590	1940	256	622	446

- Blue shading indicates exceedance of GWQS

2.6 Groundwater Analytical Results – October 2020

On October 6, 2020, monitoring wells LN-1 through LN-7 were sampled and analyzed for select VOCs, metals, pesticides, and various wet chemistry parameters as specified in the October 24, 1984 Draft Interim NJPDES Permit #0028878. The results of the October 2020 North Landfarm groundwater sampling event are summarized in **Table 3**.

Targeted VOCs and pesticides were not detected above the GWQS in the groundwater samples collected from monitoring wells LN-1 through LN-7.

Select metals were detected at concentrations above the GWQS in groundwater samples collected from all monitoring wells. General chemistry parameters were also detected above the GWQS in all groundwater samples, excluding the groundwater samples collected from wells LN-2 and LN-5. The following table summarizes the metals and general chemistry laboratory results.

Client Sample ID:		NJ Groundwater	LN-1	LN-2	LN-3	LN-4	LN-5	LN-6	LN-7
Lab Sample ID:		Criteria (NJAC	JD14256-1	JD14256-2	JD14256-3	JD14256-4	JD14256-7	JD14256-5	JD14256-6
Date Sampled:		7:9C 9/4/18)	10/6/2020	10/6/2020	10/6/2020	10/6/2020	10/6/2020	10/6/2020	10/6/2020
Matrix:			Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
Metals Analysis									
Arsenic	ug/l	3	5	4.9	11.2	16.6	ND	11.4	7.8
Iron	ug/l	300	39900	24900	41600	29600	2000	40900	31300
Manganese	ug/l	50	764	354	697	609	25.3	867	892
Sodium	ug/l	50000	177000	103000	175000	508000	46300	146000	173000
General Chemistry									
Chloride	mg/l	250	281	190	208	880	33.6	258	278
Nitrogen, Ammonia	mg/l	3	4.5	2.7	4.8	2.2	ND	4.1	3.2
Solids, Total Dissolved	mg/l	500	ND	80	80	760	80	10	110

ND – Non-Detect

- Blue shading indicates exceedance of GWQS

2.7 Conclusions

The two main contaminants of concern for the North Landfarm groundwater are arsenic and lead. A summary of arsenic and lead concentrations for the last 12 quarterly sampling events is included below.

Arsenic Concentrations

Arsenic concentrations have been generally consistent for the last 12 quarterly groundwater sampling events. The following table summarizes the arsenic exceedances from January 2018 through October 2020.

Well ID	GWQS	1/23/2018	4/24/2018	7/26/2018	10/4/2018	1/15/2019	4/15/2019	7/9/2019	10/24/2019	1/22/2020	4/14/2020	7/14/2020	10/6/2020
LN-1	3	3.9	<3.0	<3.0	3.8	<3.0	<3.0	4.3	13.7	<3.0	9.6	<3.0	5
LN-2	3	<3.0	<3.0	<3.0	<3.0	5.9	4.3	3.8	<3.0	3.2	4.5	4.8	4.9
LN-3	3	4.9	8.3	9	6.5	4.8	<3.0	9.9	6.1	6.6	9	8.2	11.2
LN-4	3	6.4	8.6	13.2	11.5	10.5	9.9	14.5	17.8	11.2	12.1	16.5	16.6
LN-5	3	15.1	6.8	3	60	13.6	27	15.6	20	5.2	11.6	3.9	<3.0
LN-6	3	7.1	6.3	8.8	3.9	<3.0	6.8	7	7.6	4.7	6	9.8	11.4
LN-7	3	5.4	3.3	10.6	4	3.9	<3.0	5.9	8	5.2	8.3	6	7.8

- Blue shading indicates exceedance of GWQS

Lead Concentrations

Lead concentrations have been below the GWQS for the last 4 rounds of groundwater sampling for monitoring well LN-1. Lead concentrations have decreased in the groundwater samples collected from monitoring well LN-5 during the last 2 rounds of sampling. The following table summarizes the lead exceedances from January 2018 through October 2020.

Well ID	GWQS	1/23/2018	4/24/2018	7/26/2018	10/4/2018	1/15/2019	4/15/2019	7/9/2019	10/24/2019	1/22/2020	4/14/2020	7/14/2020	10/6/2020
LN-1	5	7.6	<3.0	<3.0	7.1	<3.0	4.4	<3.0	18.4	3.8	4.7	<3.0	4.6
LN-5	5	<15.0	8	3.3	270	42.8	146	50.9	69.5	22.5	45.2	9.9	3.6

- Blue shading indicates exceedance of GWQS

The required Electronic Data Documentation (EDDs) is presented in **Appendix B**. The electronic laboratory analytical data packages for the samples collected for the North Landfarm are presented in **Appendix C**.

3.0 South Landfarm

3.1 Historic Information

The South Landfarm was constructed in 1975 above a former surface impoundment that previously received oily wastewaters. The South Landfarm was utilized for the treatment of oily soils and oily sludges from the onsite API Separator, corrugated plate separator, recoverable (slop) oil tank bottoms, and the tank bottoms of petroleum storage tanks.

The South Landfarm was operated during the refinery standby period from 1975 until 1984. In 1980, the South Landfarm received Resource Conservation and Recovery Act (RCRA) "Interim Status" for operation as a RCRA land treatment unit for process wastes (K051 and K052).

3.2 Site Specific Geology and Hydrogeology

The South Landfarm is situated upon approximately 8 feet of dredge fill material from the Arthur Kill. The source of the dredge fill is from the deepening of the Arthur Kill and consists of reddish-brown sands with clay and silt. Underlying this fill layer is an organic rich clayey silt unit that changes to a silty clay marsh layer at approximately 10 to 20 feet bgs. This marsh layer provides an effective aquitard (i.e., a confining barrier/layer) between the upper unconfined water table directly beneath the Landfarm, and the deeper confined water table underlying the marsh layer.

Hydrogeologic data indicates that well LS-3 is screened in poorly consolidated silty clay, which differs from the other south landfarm wells that have screened intervals that include sand units.

3.3 Hydraulic Monitoring Results

On July 10 and October 5, 2020, depth to water measurements were collected from the South Landfarm monitoring wells LS-1R and LS-2 through LS-4. Groundwater elevation contour data from the July and October 2020 monitoring events is summarized in **Table 1**.

Groundwater flow direction, as depicted on the groundwater contour maps (**Figures 5 & 6**), is generally to the south, which is consistent with historic observations.

3.4 Groundwater Monitoring

On July 16 and October 8, 2020, groundwater samples were collected via low-flow sampling methodology in accordance with the NJDEP's *FSPM*. Groundwater sampling protocols are summarized in detail in **Section 2.4**.

Groundwater monitoring records, which include low-flow field worksheets and calibration information, are included in **Appendix A**.

Groundwater samples were collected from monitoring wells LS-1R, LS-2, LS-3, and LS-4 on July 16, 2020 and October 8, 2020. SGS of Dayton, New Jersey (NJ NELAP Certification No. 12129) provided the analytical services.

3.5 Groundwater Analytical Results – July 2020

On July 16, 2020, groundwater samples were collected from wells LS-1R, LS-2, LS-3, and LS-4 and analyzed for select VOCs, metals, and general chemistry parameters in accordance with NJPDES Permit #0028878. Analytical results from the July 2020 South Landfarm groundwater sampling event are summarized in **Table 4**.

Benzene was detected in the groundwater samples collected from monitoring wells LS-3 and LS-4 at concentrations above the GWQS. Tert butyl alcohol (TBA) was detected in the groundwater sample collected from monitoring well LS-3 at concentrations above the GWQS. Arsenic and iron were detected at concentrations above the GWQS in the groundwater samples collected from all monitoring wells. General chemistry parameters were also detected above the GWQS in the groundwater samples collected from monitoring wells LS-2, LS-3, and LS-4. The following table summarizes the laboratory results.

Client Sample ID:		NJ Groundwater Criteria (NJAC 7:9C 9/4/18)	LS-1R	LS-2	LS-3	LS-4
Lab Sample ID:			JD10277-3	JD10277-4	JD10277-5	JD10277-6
Date Sampled:			7/16/2020	7/16/2020	7/16/2020	7/16/2020
Matrix:			Ground Water	Ground Water	Ground Water	Ground Water
MS Volatiles (SW846 8260C)						
Benzene	ug/l	1	ND (0.43)	0.52	10	5.3
Tert Butyl Alcohol	ug/l	100	ND (5.8)	ND (5.8)	977	32.5
Metals Analysis						
Arsenic	ug/l	3	19.4	59.7	12.6	29.2
Iron	ug/l	300	12200	3930	110000	9300
General Chemistry						
Chloride	mg/l	250	77.5	283	3130	434
Nitrogen, Ammonia	mg/l	3	1.8	1.7	11.6	24.2
Solids, Total Dissolved	ma/l	500	390	778	6490	882

ND – Non-Detect

- Blue shading indicates exceedance of GWQS

3.6 Groundwater Analytical Results – October 2020

On October 8, 2020, groundwater samples were collected from wells LS-1R, LS-2, LS-3, and LS-4 and analyzed for select VOCs, metals, and general chemistry parameters in accordance with NJPDES Permit #0028878. Analytical results from the October 2020 South Landfarm groundwater sampling event are summarized in **Table 5**.

Benzene was detected in the groundwater samples collected from monitoring wells LS-3 and LS-4 at concentrations above the GWQS. TBA was detected in the groundwater sample collected from monitoring well LS-3 at concentrations above the GWQS. Several metals were detected at concentrations above the GWQS in the groundwater samples collected from all monitoring wells. General chemistry parameters were also detected above the GWQS in the groundwater samples collected from monitoring wells LS-2, LS-3, and LS-4. The following table summarizes the laboratory results.

Client Sample ID:		NJ Groundwater Criteria (NJAC 7:9C 9/4/18)	LS-1R	LS-2	LS-3	LS-4
Lab Sample ID:			JD14484-3	JD14484-4	JD14484-5	JD14484-6
Date Sampled:			10/8/2020	10/8/2020	10/8/2020	10/8/2020
Matrix:			Ground Water	Ground Water	Ground Water	Ground Water
MS Volatiles (SW846 8260D)						
Benzene	ug/l	1	ND (0.43)	ND (0.43)	3.9	3.5
Tert Butyl Alcohol	ug/l	100	ND (5.8)	6.1 J	1070	82.9
Metals Analysis						
Arsenic	ug/l	3	11.9	43.6	12.7	24.2
Iron	ug/l	300	11400	2580	84000	6740
Manganese	ug/l	50	2710	172	1390	154
Sodium	ug/l	50000	82500	174000	1660000	376000
General Chemistry						
Chloride	mg/l	250	83.8	368	3340	514
Nitrogen, Ammonia	mg/l	3	1.4	1.8	9.5	25.1
Solids, Total Dissolved	mg/l	500	250	953	4630	1080

ND- Non-Detect

- Blue shading indicates exceedance of GWQS

3.7 Conclusions

The three main contaminants of concern for the South Landfarm monitoring wells are benzene, TBA, and arsenic. A summary of benzene, TBA, and arsenic concentrations for the last 12 quarterly sampling events is included below.

Benzene Concentrations

Benzene concentrations have been generally consistently below the GWQS for the last 12 quarterly groundwater sampling events for monitoring wells LS-1 and LS-2. Benzene concentrations have fluctuated in the groundwater samples collected from monitoring wells LS-3 and LS-4 (summarized below).

- **Monitoring Well LS-3**

Benzene concentrations have ranged from a high of 88.1 parts per billion (ppb) (April 2018) to a low of 3.9 ppb (October 2020) in the groundwater samples collected from well LS-3.

- **Monitoring Well LS-4**

Benzene concentrations have fluctuated from a high of 24.8 pb (October 2018) to a low of 0.73 ppb (April 2018) in the groundwater samples collected from well LS-4.

The following table summarizes the benzene exceedances from January 2018 through October 2020.

Well ID	GWQS	1/25/2018	4/25/2018	7/25/2018	10/5/2018	1/17/2019	4/17/2019	7/11/2019	10/22/2019	1/23/2020	4/14/2020	7/16/2020	10/8/2020
LS-2	1	ND	0.26	1.2	1.1	ND	ND	0.51	2.4	ND	ND	0.52	ND
LS-3	1	32.1	88.1	18	8.9	61.6	58.2	15.3	10.5	51.4	51.5	10	3.9
LS-4	1	1.3	0.86	9.4	24.8	2.2	5.9	20.4	4.2	0.73	1.1	5.3	3.5

- Blue shading indicates exceedance of GWQS

TBA Concentrations

TBA has only been detected in 2 of the South Landfarm monitoring wells: LS-3 and LS-4. TBA has been consistently detected at concentrations over the GWQS for the last 11 sampling events for well LS-3. TBA has only been intermittently detected at concentrations over the GWQS in groundwater samples collected from well LS-4, and has been below the GWQS for the last 5 sampling events for well LS-4. The following table summarizes the TBA exceedances from January 2018 through October 2020.

Well ID	GWQS	1/25/2018	4/25/2018	7/25/2018	10/5/2018	1/17/2019	4/17/2019	7/11/2019	10/22/2019	1/23/2020	4/14/2020	7/16/2020	10/8/2020
LS-3	100	76.4	126	417	494	239	210	530	801	337	387	977	1070
LS-4	100	ND	14.3	32.3	132	128	29.7	103	82.1	10.8	12.1	32.5	82.9

- Blue shading indicates exceedance of GWQS

Arsenic Concentrations

Arsenic concentrations have been generally consistent for the last 12 quarterly groundwater sampling events for all South Landfarm monitoring wells, excluding monitoring well LS-2. Arsenic concentrations have fluctuated in the groundwater samples collected from monitoring well LS-2. The following table summarizes the arsenic exceedances from January 2018 through October 2020.

Well ID	GWQS	1/25/2018	4/25/2018	7/25/2018	10/5/2018	1/17/2019	4/17/2019	7/11/2019	10/22/2019	1/23/2020	4/14/2020	7/16/2020	10/8/2020
LS-1R	3	10	3.7	20.6	12.7	8.3	10.8	19.6	23.4	12.9	6.5	19.4	11.9
LS-2	3	24	40.6	55.9	65.6	29.7	41.8	46.7	104	28.4	31.6	59.7	43.6
LS-3	3	7.7	7	8	<3.0	6.1	8.2	9.7	11	11.3	8	12.6	12.7
LS-4	3	20.9	14.9	22.7	25.9	15.9	22.7	29.6	20.9	19.8	15.4	29.2	24.2

- Blue shading indicates exceedance of GWQS

The required EDDs are presented in **Appendix B**. The electronic laboratory analytical data packages associated with the samples collected for the South Landfarm in July and October 2020 are presented in **Appendix C**.

4.0 No. 1 Landfarm

4.1 Historic Information

The No. 1 Landfarm began operations in December 1985 under a revised Part A Interim Status Permit granted by the NJDEP on April 26, 1984 and the RCRA Industrial Waste Management Facility (IWMF) Operating Permit (Interim NJPDES Discharge to Groundwater Permit #0028878 issued in April 1985) for operation of the No. 1 Landfarm.

The No. 1 Landfarm is lined with an impermeable compacted clay liner. Above the clay liner is a leachate collection system, which collects water that has percolated through the treatment zone of the Landfarm. The leachate collection system was designed not to allow any leachate (soil-pore water) discharges into the groundwater.

The Landfarm was permitted to treat 4 RCRA hazardous waste streams - API Separator Sludge (K-051), heat exchanger bundle cleaning sludge (K-050), leaded tank bottoms (K-052), and Tetraethyl Lead (TEL) tank bottoms (P-110).

4.2 Site Specific Geology and Hydrogeology

The No. 1 Landfarm area was constructed on top of dredged sediments from the Arthur Kill, as indicated in the May 10, 1984 RCRA Part B Permit Application.

The North Drainage Ditch is a tidal stream adjacent to the north end of the Landfarm and runs southeast to northwest. This ditch is a transitory municipal storm water drainage channel. A smaller ditch, located to the west of the No. 1 Landfarm, drains into the larger municipal stormwater ditch.

During monitoring well L1-2 installation, a gravel layer was encountered and was likely applied as fill within the bed of a buried tributary to the Smith Creek that existed prior to construction of the refinery facility. The tributaries and Smith Creek were filled in as the facility was constructed.

A pumping test was conducted on well L1-2 on April 3, 1987. The results from this pumping test were provided in the 2001 Comprehensive Management Plan (CMP). Based on this data, it has been estimated that the velocity of the groundwater in the No. 1 Landfarm area to be approximately 5-feet per day (feet/day). This velocity is consistent with typical gravelly sand horizons under the relatively steep hydraulic gradient observed in this area. This is more than an order of magnitude faster than other observed locations at the facility.

4.3 Hydraulic Monitoring Results

On July 10 and October 5, 2020, depth to water measurements were collected from the No. 1 Landfarm monitoring wells L1-1 through L1-4, BG-2, and BG-3. Groundwater elevation contour data from the July and October 2020 monitoring events are summarized in **Table 1**.

Groundwater flow direction is generally to the north, northeast toward the North Drainage Ditch, which is consistent with historic observations.

Groundwater contour maps are included as **Figure 7** and **Figure 8**.

4.4 Groundwater Monitoring

On July 15 and October 7, 2020, groundwater samples were collected via low-flow sampling methodology in accordance with the NJDEP's *FSPM*. Groundwater sampling protocols are summarized in detail in **Section 2.4**.

Groundwater monitoring records, which include low-flow field worksheets and calibration information, are included in **Appendix A**.

Groundwater samples were collected from monitoring wells L1-1 through L1-4, BG-2, and BG-3 on July 15, 2020 and October 7, 2020. A leachate sample was collected on December 11, 2020. The December leachate sample was collected directly from the sampling port, located prior to treatment, in the leachate collection system. SGS of Dayton, New Jersey (NJ NELAP Certification No. 12129) provided the analytical services.

4.5 Groundwater Analytical Results – July 2020

On July 15, 2020, groundwater samples were collected from monitoring wells L1-1 through L1-4, BG-2, and BG-3, and analyzed for select VOCs, semi-volatile organic compounds (SVOCs), metals, and general chemistry parameters in accordance with the NJPDES Permit #NJ0028878. Analytical results from the July 2020 No. 1 Landfarm groundwater sampling event are summarized in **Table 6**.

Targeted VOCs and SVOCs were not detected in the groundwater samples at concentrations above the GWQS in all No. 1 Landfarm monitoring wells. Select metals were detected at concentrations above the GWQS in groundwater samples collected from all monitoring wells. The following table summarizes the laboratory results.

Client Sample ID:		NJ Groundwater Criteria	L1-1	L1-2	L1-3	L1-4	BG-2	BG-3
Lab Sample ID:			JD10216-3	JD10216-4	JD10216-5	JD10216-6	JD10216-7	JD10216-8
Date Sampled:			7/15/2020	7/15/2020	7/15/2020	7/15/2020	7/15/2020	7/15/2020
Matrix:			Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
Metals Analysis								
Aluminum	ug/l	200	1660	ND (200)	983	ND (200)	ND (200)	ND (200)
Arsenic	ug/l	3	1.1	27.3	12.5	2	15	30.1
Iron	ug/l	300	1820	23000	6650	586	4450	67000
Manganese	ug/l	50	16.7	259	204	37.1	43.9	425
Sodium	ug/l	50000	51100	163000	56600	ND (10000)	32300	32900

- Blue shading indicates exceedance of GWQS

4.6 Groundwater Analytical Results – October 2020

On October 7, 2020, groundwater samples were collected from monitoring wells L1-1 through L1-4, BG-2, and BG-3, and analyzed for select VOCs, SVOCs, metals, and general chemistry parameters in accordance with the NJPDES Permit #NJ0028878. Analytical results from the October 2020 No. 1 Landfarm groundwater sampling event are summarized in **Table 7**.

Targeted VOCs and SVOCs were not detected in the groundwater samples at concentrations above the GWQS in all No. 1 Landfarm monitoring wells. Select metals were detected at concentrations above the GWQS in groundwater samples collected from all monitoring wells, excluding monitoring well L1-4. The following table summarizes the laboratory results.

Client Sample ID:		NJ Groundwater Criteria (NJAC 7:9C 9/4/18)	L1-1	L1-2	L1-3	L1-4	BG-2	BG-3
Lab Sample ID:			JD14366-3	JD14366-4	JD14366-5	JD14366-6	JD14366-7	JD14366-8
Date Sampled:			10/7/2020	10/7/2020	10/7/2020	10/7/2020	10/7/2020	10/7/2020
Matrix:			Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
Metals Analysis								
Aluminum	ug/l	200	4270	ND (200)	212	ND (200)	201	ND (200)
Arsenic	ug/l	3	3	29.3	28.2	ND (3.0)	19.2	12.6
Iron	ug/l	300	6770	19400	24700	230	4970	16400
Lead	ug/l	5	10.7	ND (3.0)	ND (3.0)	ND (3.0)	ND (3.0)	ND (3.0)
Manganese	ug/l	50	37	257	596	36	49.2	285
Sodium	ug/l	50000	44000	153000	118000	ND (10000)	49900	40900

ND – Non-detect

- Blue shading indicates exceedance of GWQS

4.7 Additional Monitoring – August & December 2020

On August 25, 2020, soil samples were collected from three zones in the No. 1 Landfarm and analyzed for VOCs, SVOCs, metals, and general chemistry parameters. The three zones are defined as follows: the Zone of Incorporation (ZOI) is the interval located 0.5 to 1.0 foot below grade, the Treatment Zone (TZ) is the interval located 1.5-3.0 feet below grade, and the Unsaturated Zone (UZ) is the interval located 3.0 to 4.0 feet below grade.

Targeted VOCs were not detected over the applicable soil standards for all zones that were sampled. Several polyaromatic hydrocarbons (PAHs) were detected over applicable

soil standards for the TZ and UZ samples. Several metals were also detected above applicable soil standards in all zones. Soil sample results are presented on **Table 8**. The following table summarizes the exceedances.

Client Sample ID:		NJ Residential Direct Contact Soil	NJ Non- Residential Direct Contact Soil	ZOI (0.0-1.5')	TZ (1.5-3.0')	VZ (3.0-4.0')
Lab Sample ID:				JD12200-1	JD12200-2	JD12200-3
Date Sampled:				8/25/2020	8/25/2020	8/25/2020
Matrix:				Soil	Soil	Soil
MS Semi-volatiles (SW846 8270D)						
Benzo(a)anthracene	mg/kg	5	17	0.119 J	0.281	3.05
Benzo(a)pyrene	mg/kg	0.5	2	0.171 J	0.451	2.51
Dibenzo(a,h)anthracene	mg/kg	0.5	2	ND (0.094)	0.254	0.733
Metals Analysis						
Arsenic	mg/kg	19	19	57.2 °	62.5 °	25.8 °
Beryllium	mg/kg	16	140	0.33	0.35	1.2
Cadmium	mg/kg	78	78	1.7 °	2.1 °	0.91
Lead	mg/kg	400	800	148 °	170 °	114 °
Mercury	mg/kg	23	65	1.7	1.7	0.54
Nickel	mg/kg	1600	23000	1550 °	1750	348
Selenium	mg/kg	390	5700	14.2	16.6 °	<4.7 °
Vanadium	mg/kg	78	1100	100 °	112 °	52.6 °

° Elevated detection limit due to dilution required for high interfering element.

- Highlighted concentrations indicate exceedance of soil standard

A leachate sample (L1-Leachate) is collected tri-annually and a sample was collected on December 11, 2020. The L1-Leachate sample is a pre-treatment sample and is analyzed for VOCs, SVOCs, metals, ammonia, and general chemistry.

The L1-Leachate results for December 2020 indicate that nickel was detected at a concentration of 252 ppb, which is above the GWQS of 100 ppb. Leachate sample results are summarized in **Table 8**.

4.8 Conclusions

Arsenic is the main contaminant of concern for the No. 1 Landfarm groundwater. A summary of arsenic concentrations for the last 12 quarterly sampling events is included below.

Arsenic Concentrations

Arsenic concentrations have been generally consistent for the last 12 quarterly groundwater sampling events, except for the January 2018 sampling event. During the January 2018 sampling event, arsenic concentrations detected in the groundwater samples collected from monitoring wells L1-2 and BG-2 were elevated in comparison to previous sampling events. Also, the concentrations detected in the groundwater samples collected from monitoring well BG-3 have fluctuated over the last 12 quarters. The following table summarizes the arsenic exceedances from January 2018 through October 2020.

Well ID	GWQS	1/24/2018	4/26/2018	7/24/2018	10/3/2018	1/16/2019	4/16/2019	7/11/2019	10/23/2019	1/23/2020	4/14/2020	7/15/2020	10/7/2020
L1-2	3	121	31.5	31.2	29.2	19	16.6	22.6	25.4	15.9	19	27.3	29.3
L1-3	3	14.5	14.1	23.2	22.8	6.6	7.5	13.5	21.8	8.7	5.2	12.5	28.2
BG-2	3	43.6	8.7	12.1	12.1	7.5	9.1	15.7	6.1	7	14.3	15	19.2
BG-3	3	50.2	<3.0	12	12	7	2.7	6.4	14	5.6	3.8	30.1	12.6

- Blue shading indicates exceedance of GWQS

The required EDDs are presented in **Appendix B**. The electronic laboratory analytical data packages for the samples collected for the No. 1 Landfarm in July and October 2020 are presented in **Appendix C**.

5.0 Summary and Implementation Schedule

The metals testing confirms naturally occurring chemicals have affected the shallow groundwater beneath the three landfarm areas including: Iron, Manganese, Sodium, Chlorides, Ammonia, and total dissolved solids. Each of these chemicals exceed the NJDEP Class IIA drinking water standards. The groundwater quality standards (NJAC 7:9c) allows the establishment of a Class IIB aquifer designation where “conventional water supply treatment, mixing, or other similar techniques” cannot create a potable water below the applicable groundwater quality standards. Supplemental groundwater monitoring and analytical data will provide a more extensive evaluation of the groundwater characteristics and naturally occurring chemicals beneath the site.

Remedial Action Workplans (RAWs) were submitted for the three landfarms in August/September 2016. The status for each landfarm is as follows:

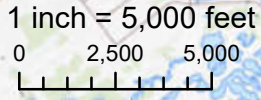
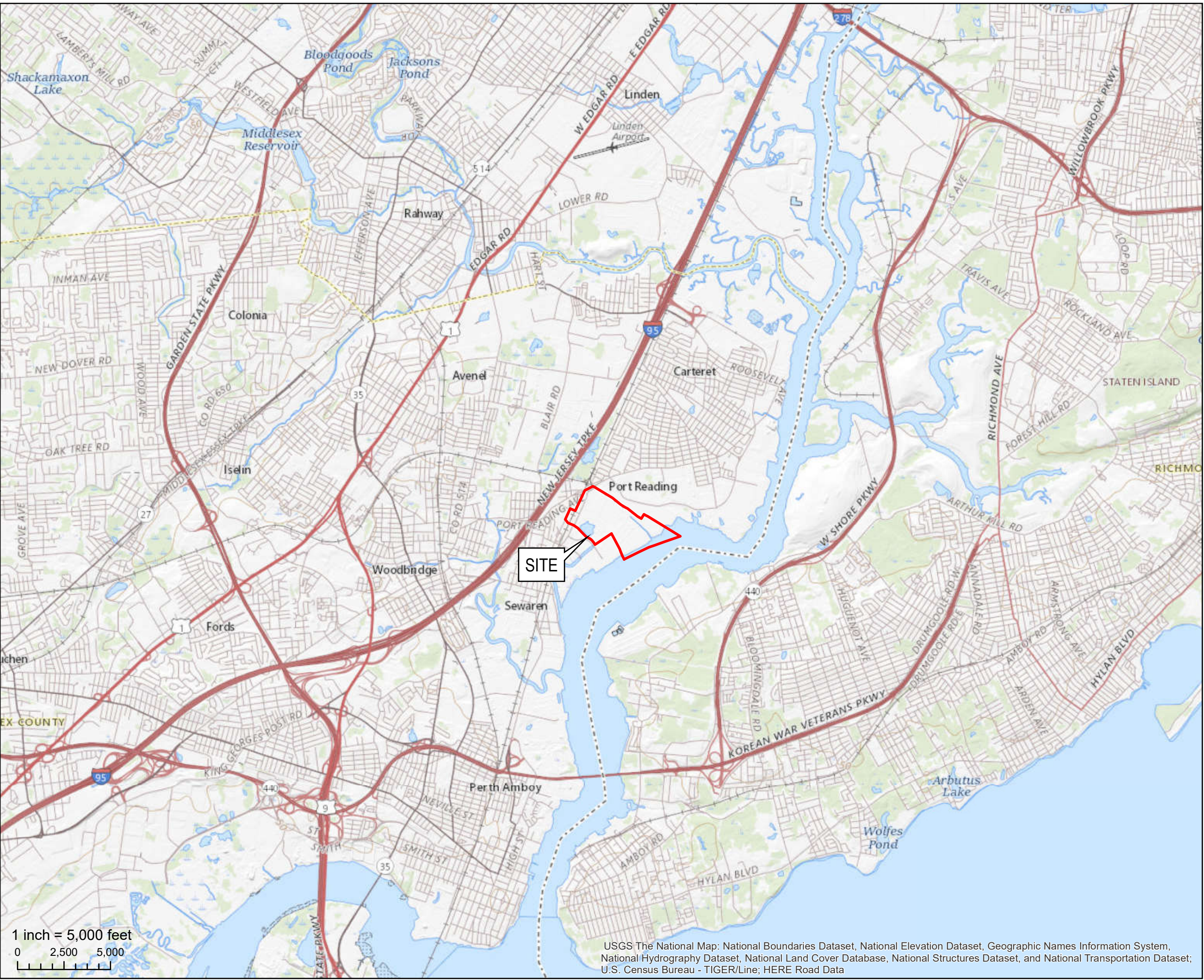
- North Landfarm
 - The NJDEP/USEPA provided comments regarding the RAW in June 2018.
 - The comments were incorporated into the 90% Soil Remedial Action Design (RAD) and submitted on October 24, 2019.
 - The NJDEP and USEPA issued an approval letter for the 90% design on April 28, 2020.
 - The current property owner (Buckeye) is in the process of lining the tankfield located directly adjacent to the North Landfarm.
 - The 100% RAD will be finalized once the tankfield lining project is complete and as-built drawings are provided to Hess/Earth Systems.
- South Landfarm
 - The NJDEP/USEPA provided comments regarding the RAW in March 2019.
 - Preparation of the Response to Comments (RTC) and the 90% RAD is currently underway and will incorporate the NJDEP/USEPA comments.
- Landfarm No. 1
 - The 100% Soil RAD for the landfarm engineering control was submitted in May 2019.
 - Based on October 2019 NJDEP/USEPA comments, a revised 100% Soil RAD for was submitted on December 17, 2019.
 - The NJDEP/USEPA issued an approval letter for the 100% design on April 28, 2020.
 - The following permits were submitted in June 2020 and have been approved by the NJDEP on the dates provided:

- Soil Erosion & Sediment Control Plan (Freehold Soil Conservation District), approved on August 17, 2020
- Flood Hazard Area Individual Permit (NJDEP Land Use Regulation Program), approved on September 25, 2020
- Waterfront Development GP-11 Permit (NJDEP Land Use Regulation Program), approved on September 25, 2020
- Freshwater Wetland GP-4 Permit (NJDEP Land Use Regulation Program), approved on September 25, 2020
- NJPDES B4B Permit (NJDEP Wastewater Program), approved on September 15, 2020
- The following permits were submitted in September/October 2020 and are currently being reviewed by the NJDEP.
 - Treatment Works Approval TWA-1 Permit (NJDEP Wastewater Program), deemed administratively complete on 11/23, currently in technical review.
 - NJPDES Individual Permit (NJDEP Stormwater Program), deemed administratively complete on 10/1, currently in technical review.

HC-PR will continue to submit semi-annual Groundwater Monitoring reports that present and discuss the current sampling activities. The Landfarm wells will continue to be sampled on a quarterly basis, pending closure. The next sampling events will be conducted in January and April 2021.


FIGURES

Document Path: P:\ArcGIS\Hess Projects\1114J00 - Port Reading Hess\1114J01 - Stewide\GIS\Port Reading - USGS Site Location Figure.mxd



USGS The National Map: National Boundaries Dataset, National Elevation Dataset, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; U.S. Census Bureau - TIGER/Line; HERE Road Data

LEGEND

 Port Reading Site Boundary



NEW JERSEY QUADRANGLE LOCATION:
53 - JERSEY CITY, NEW JERSEY

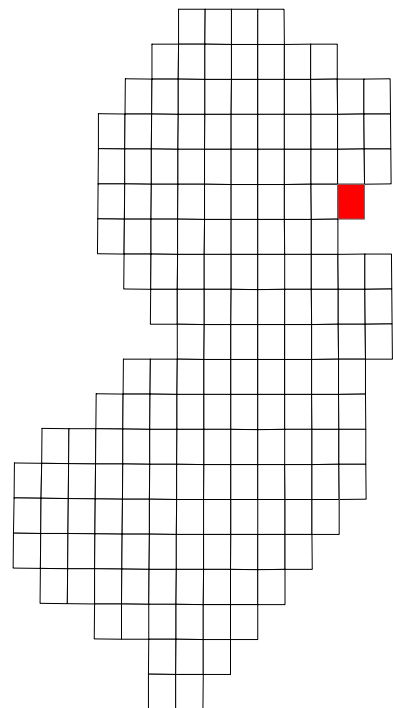


FIGURE 1:
USGS SITE LOCATION MAP

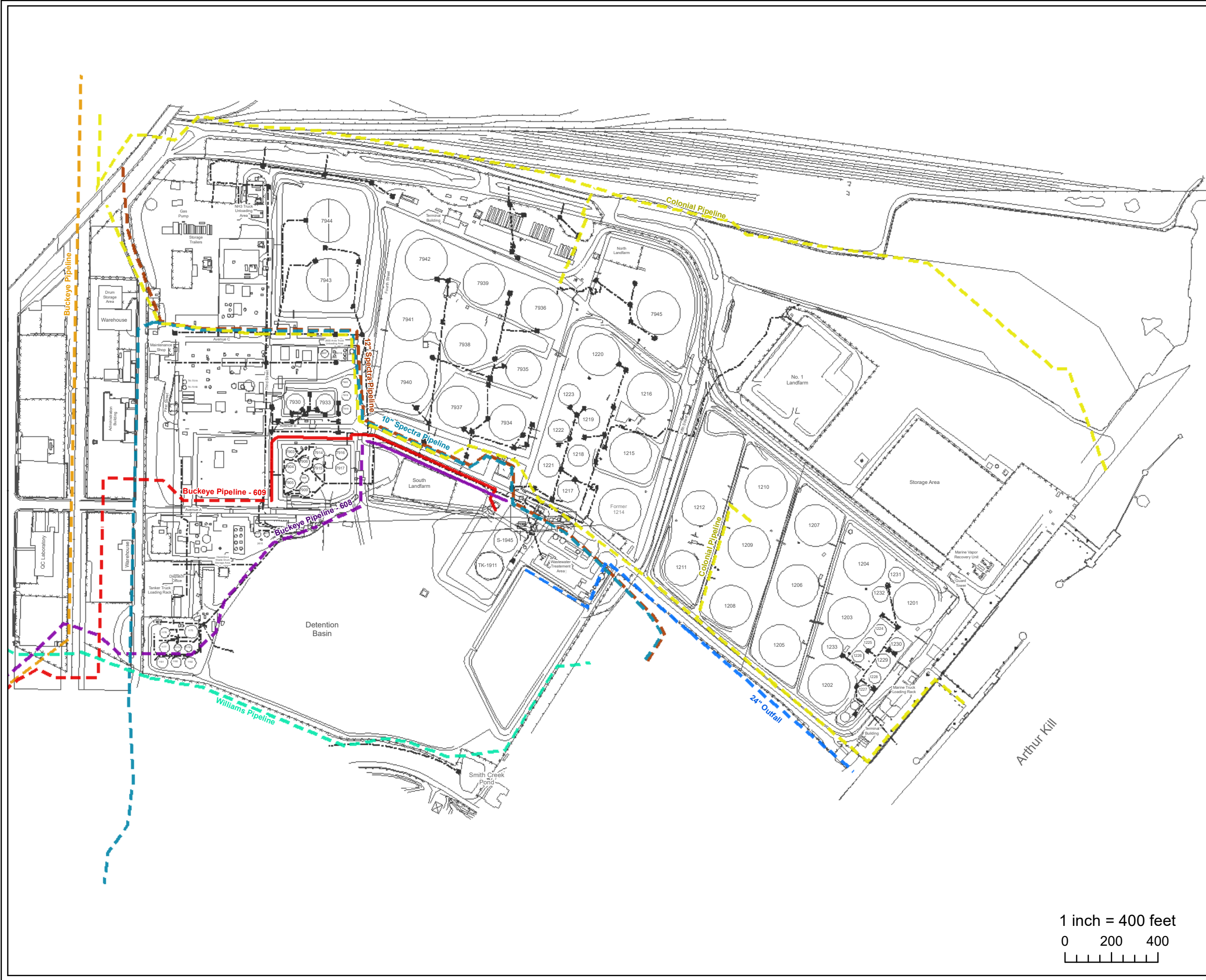
HESS CORPORATION
FORMER PORT READING TERMINAL
750 CLIFF ROAD
PORT READING, NEW JERSEY

Project #:	1114J01	Drawn:	4/16/2020
SRP PI#:	006148	Drawn By:	KJ



Environmental Engineering
1625 Highway 71, Belmar, NJ 07719
T. 732.739.6444 | F. 732.739.0451

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LEGEND

- Utility and Pipe Lines
- Solid Line: Aboveground
 - Dotted Line: Underground



FIGURE: 2
SITE PLAN

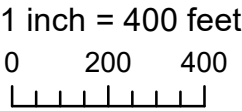
HESS CORPORATION
FORMER PORT READING COMPLEX
750 CLIFF ROAD
PORT READING, NEW JERSEY

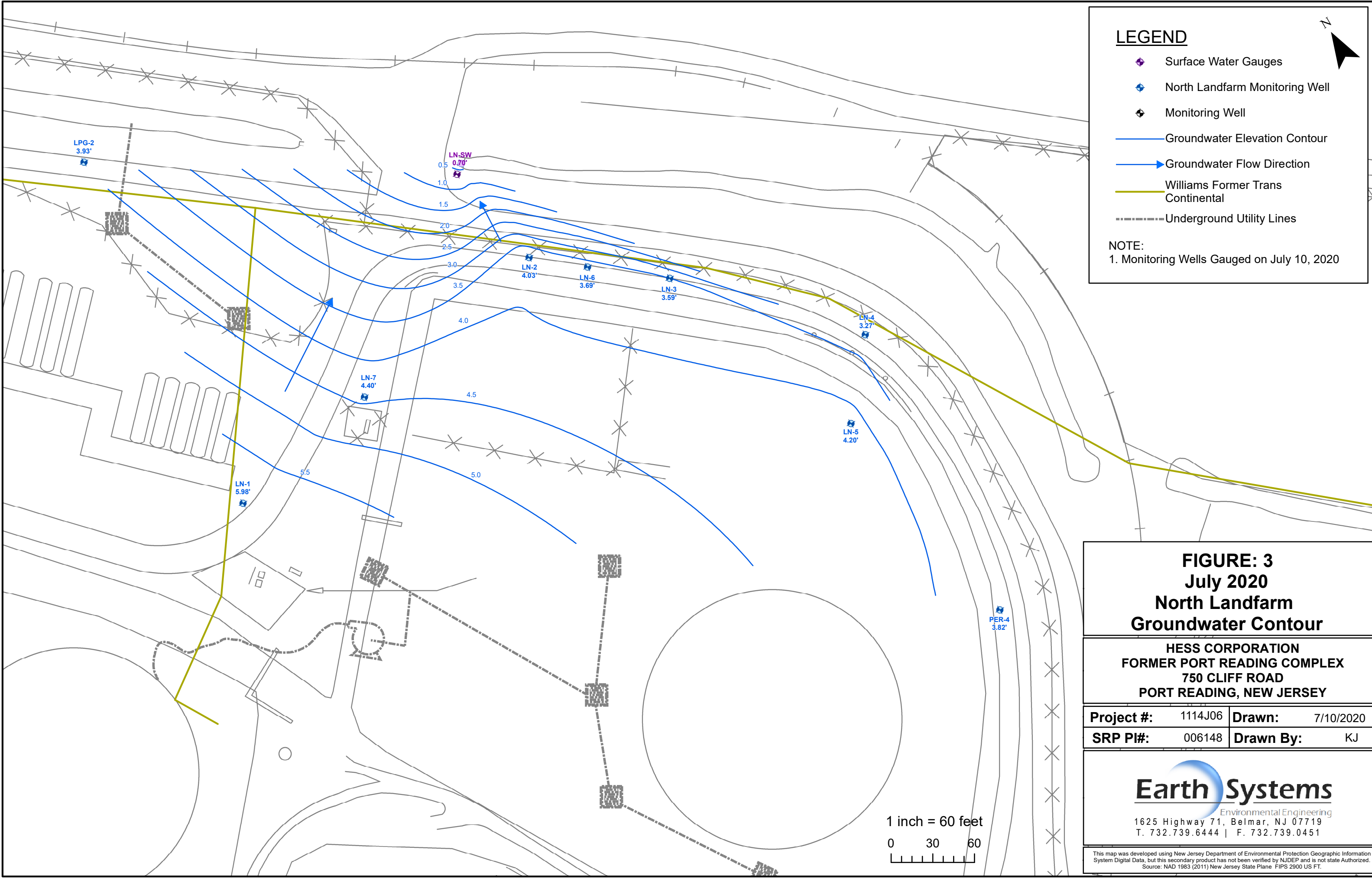
Project #:	1114J01	Drawn:	11/09/2020
SRP PI#:	006148	Drawn By:	KJ



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LEGEND

Surface Water Gauges

North Landfarm Monitoring Well

Monitoring Well

Groundwater Elevation Contour

Groundwater Flow Direction

Williams Former Trans Continental

Underground Utility Lines

NOTE:

1. Monitoring Wells Gauged on July 10, 2020

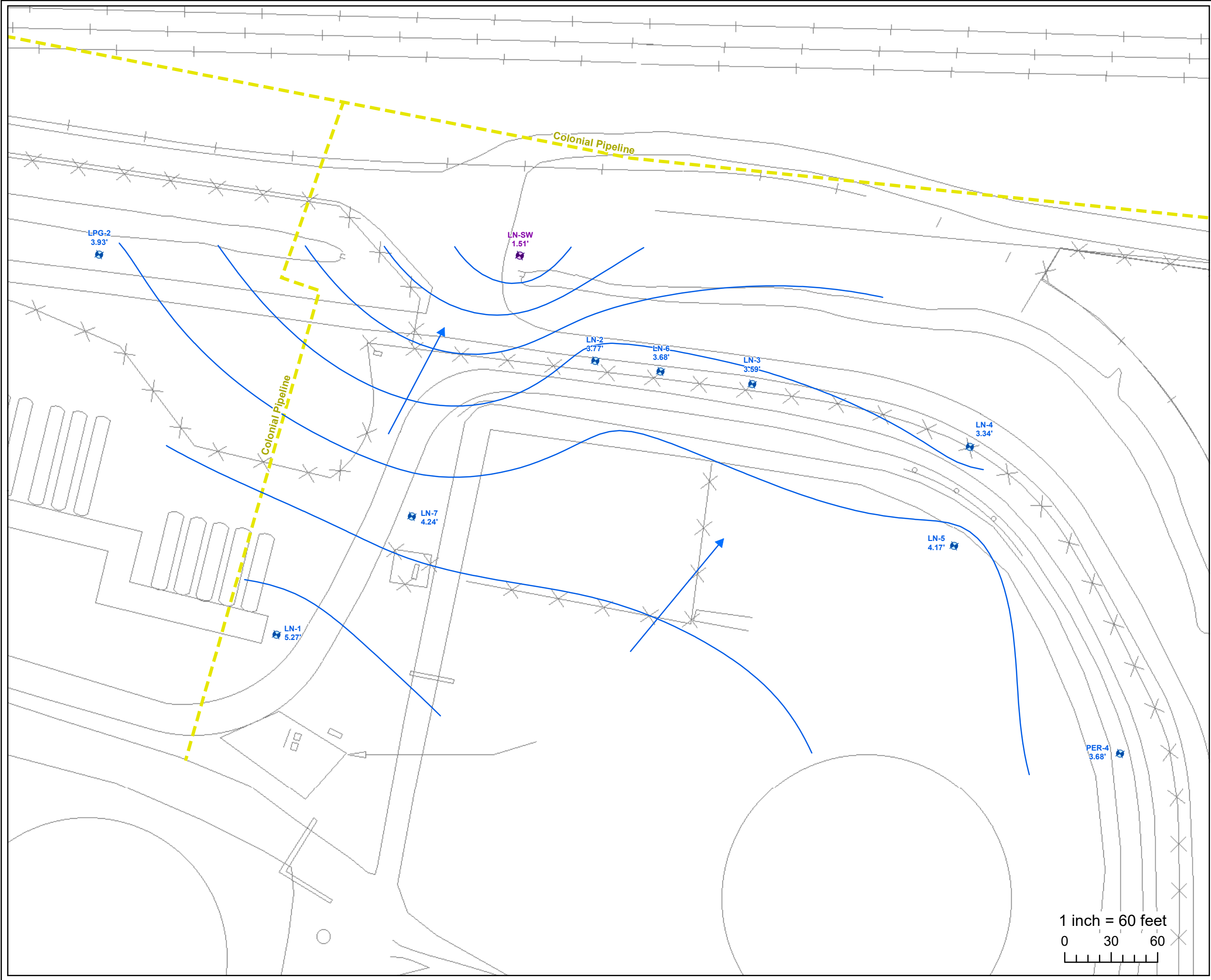
FIGURE: 3
July 2020
North Landfarm
Groundwater Contour

HESS CORPORATION
FORMER PORT READING COMPLEX
750 CLIFF ROAD
PORT READING, NEW JERSEY

Project #:	1114J06	Drawn:	7/10/2020
SRP PI#:	006148	Drawn By:	KJ

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Legend

- Surface Water Gauges
- North Landfarm Monitoring Well
- Monitoring Well
- Groundwater Elevation Contour
- Groundwater Flow Direction



NOTE:
1. All wells gauged on October 5, 2020

FIGURE: 4
OCTOBER 2020
NORTH LANDFARM
GROUNDWATER ELEVATION CONTOUR

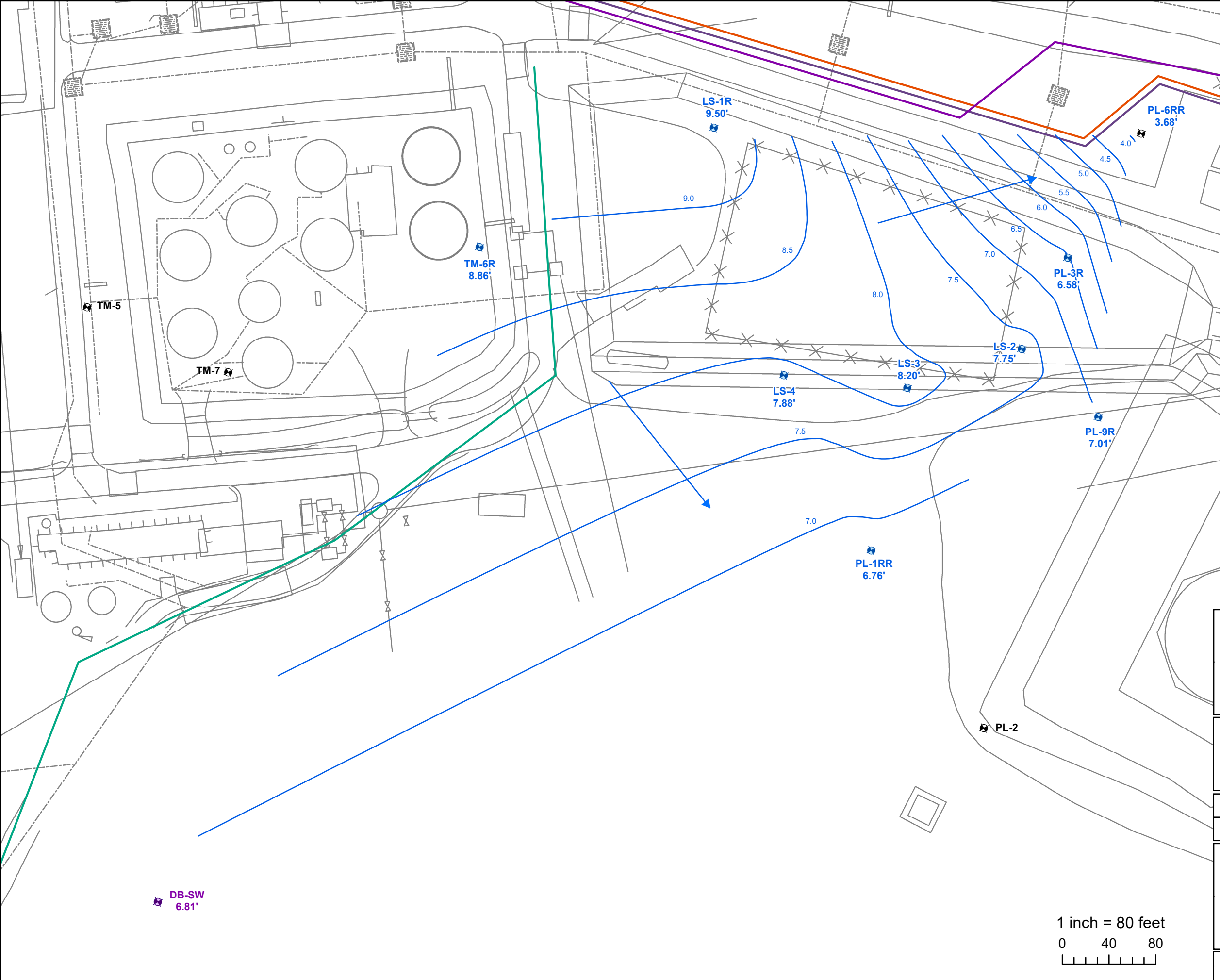
HESS CORPORATION
FORMER PORT READING COMPLEX
750 CLIFF ROAD
PORT READING, NEW JERSEY

Project #:	1114J01	Drawn:	10/20/2020
SRP PI#:	006148	Drawn By:	KJ



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LEGEND

Surface Water Gauge

Gauged Monitoring Well

Monitoring Well

Groundwater Elevation Contour

Groundwater Flow Direction

Buckeye Pipeline

Colonial Pipeline

12" Spectra Pipeline

10" Spectra Pipeline

Williams Former Trans Continental

Williams Pipeline

Unknown Pipeline

Underground Utility Lines

NOTE:
Monitoring Wells Gauged on
July 10, 2020

FIGURE: 5
July 2020
South Landfarm
Groundwater Contour

HESS CORPORATION
FORMER PORT READING COMPLEX
750 CLIFF ROAD
PORT READING, NEW JERSEY

Project #: 1114J01

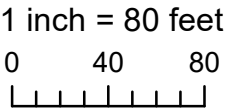
Drawn: 7/10/2020

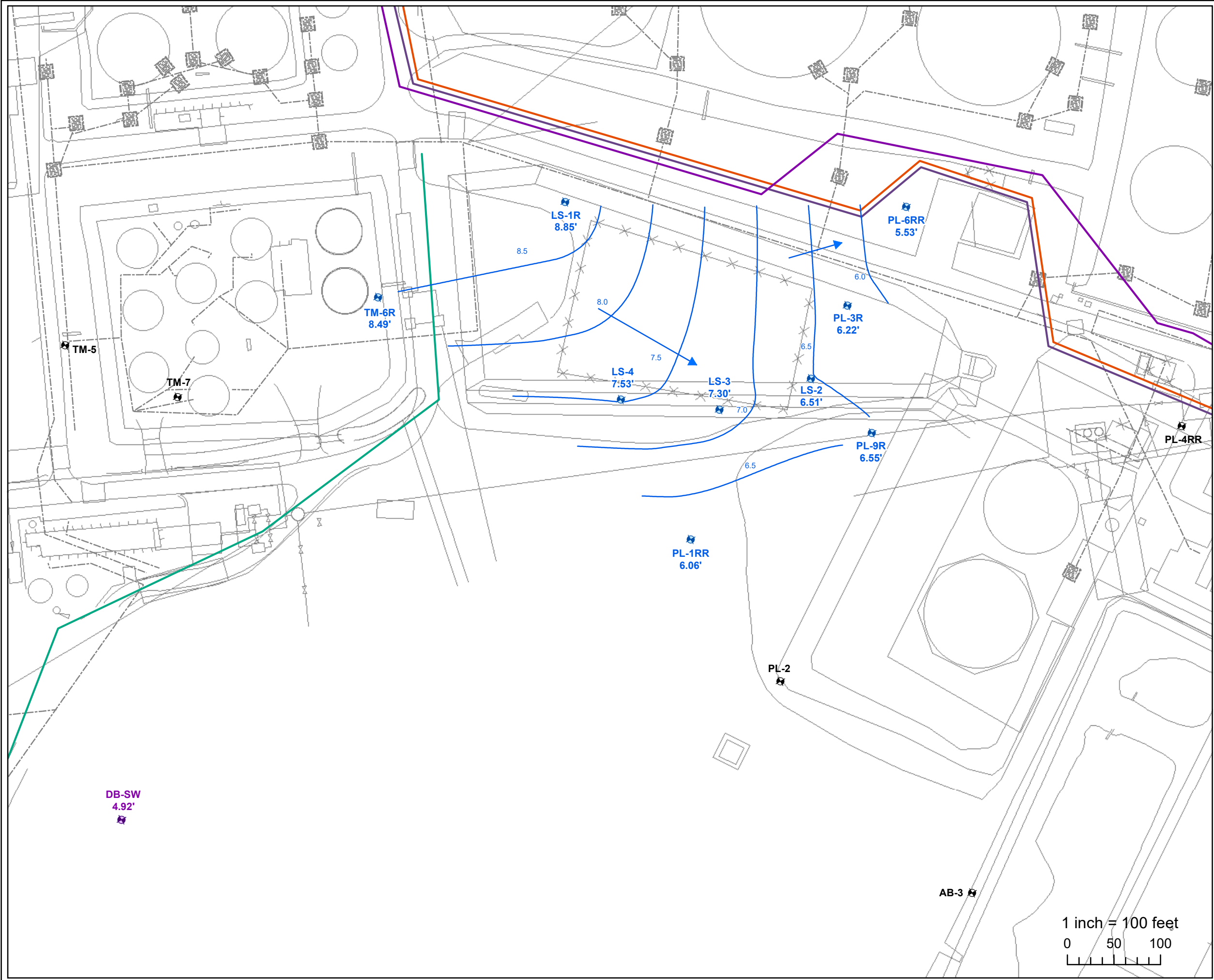
SRP PI#: 006148

Drawn By: KJ

Environmental Engineering
1625 Highway 71, Belmar, NJ 07719
T. 732.739.6444 | F. 732.739.0451

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Legend

- Surface Water Gauge
- Gauged Monitoring Well
- Monitoring Well
- Groundwater Elevation Contour
- Groundwater Flow Direction

Pipelines

- Buckeye Pipeline
- Colonial Pipeline
- 12" Spectra Pipeline
- 10" Spectra Pipeline
- Williams Former Trans Continental
- Williams Pipeline
- Unknown Pipeline
- Underground Utility Lines

NOTE:
1. All wells gauged on October 5, 2020

FIGURE: 6
OCTOBER 2020
SOUTH LANDFARM
GROUNDWATER ELEVATION CONTOUR

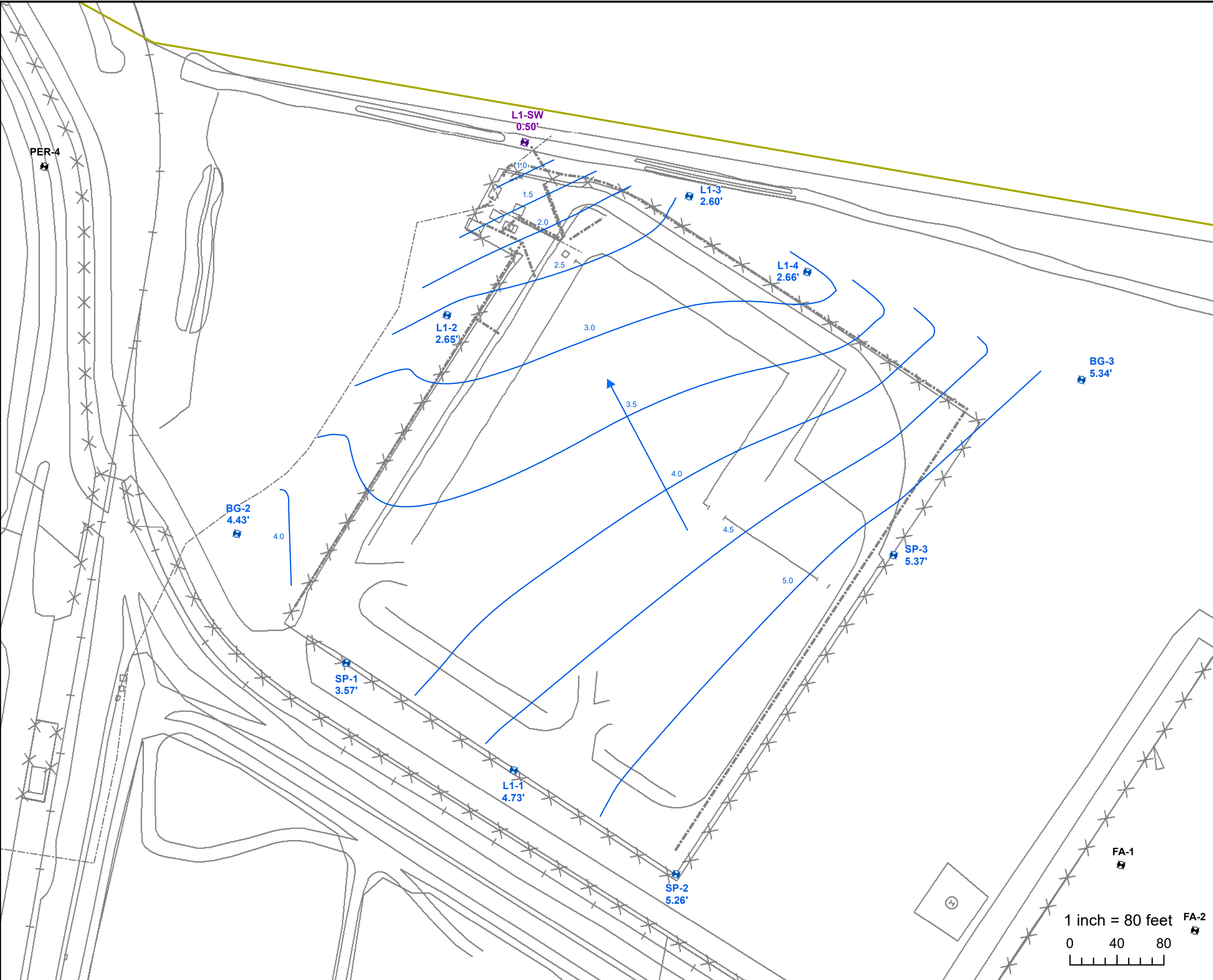
HESS CORPORATION
FORMER PORT READING COMPLEX
750 CLIFF ROAD
PORT READING, NEW JERSEY

Project #:	1114J01	Drawn:	10/12/2020
SRP PI#:	006148	Drawn By:	KJ



Environmental Engineering
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LEGEND

- Surface Water Gauge
- No1 Landfarm Monitoring Well
- Monitoring Well
- Groundwater Elevation Contour
- Groundwater Flow Direction
- Williams Former Trans Continental
- Underground Utility Lines

NOTE:
1. Monitoring Wells were gauged
on July 10, 2020

FIGURE: 7
July 2020
No 1 Landfarm
Groundwater Contour

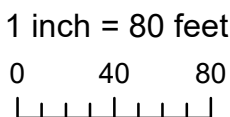
HESS CORPORATION
FORMER PORT READING COMPLEX
750 CLIFF ROAD
PORT READING, NEW JERSEY

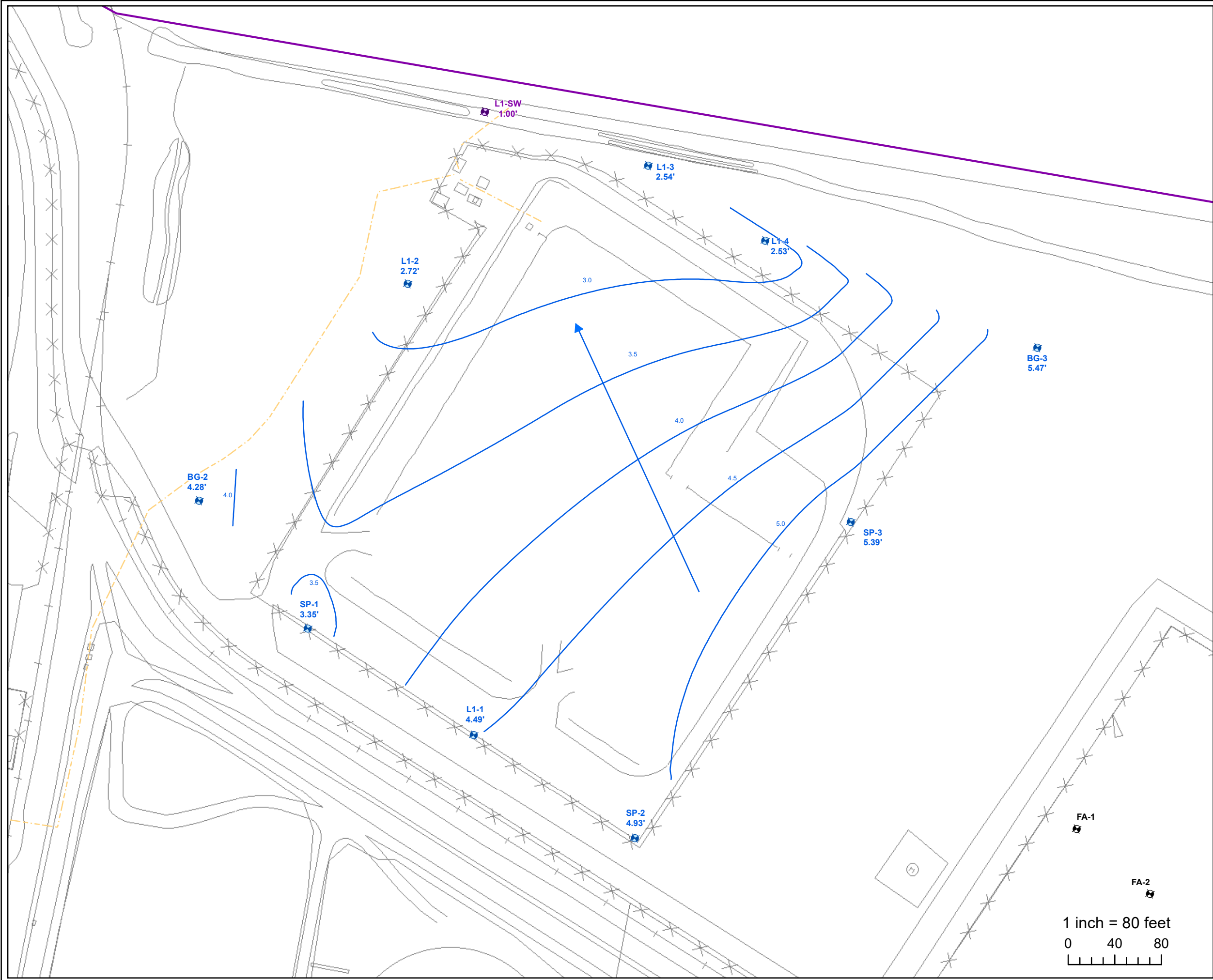
Project #:	1114J01	Drawn:	7/10/2020
SRP PI#:	006148	Drawn By:	KJ



Environmental Engineering
1625 Highway 71, Belmar, NJ 07719
T. 732.739.6444 | F. 732.739.0451

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Legend

Surface Water Gauge

Gauged Monitoring Well

Monitoring Well

Groundwater Elevation Contour

Pipelines

Buckeye Pipeline

Colonial Pipeline

12" Spectra Pipeline

10" Spectra Pipeline

Williams Former Trans Continental

Williams Pipeline

Unknown Pipeline

Underground Utility Lines

NOTE:

1. All wells gauged on October 5, 2020

FIGURE: 8

OCTOBER 2020

NUMBER 1 LANDFARM

GROUNDWATER ELEVATION CONTOUR

HESS CORPORATION

FORMER PORT READING COMPLEX

750 CLIFF ROAD

PORT READING, NEW JERSEY

Project #:	1114J01	Drawn:	10/12/2020
SRP PI#:	006148	Drawn By:	KJ

Earth Systems

Environmental Engineering

1625 Highway 71, Belmar, NJ 07719

T. 732.739.6444 | F. 732.739.0451

This map was developed using New Jersey Department of Environmental Protection Geographic Information System Digital Data, but this secondary product has not been verified by NJDEP and is not state Authorized. Source: NAD 1983 (2011) New Jersey State Plane FIPS 2900 US FT.

TABLES

Table 1
Quarterly Landfarms Monitoring Well Gauging Data
Hess Corporation - Former Port Reading Complex
750 Cliff Road
Port Reading, Middlesex County, New Jersey

Groundwater Gauging Data						
Well I.D.	Date	Depth to Water	DTB from TOC	TOC Elevation	Water Elevation	PID
LN-SW	10/5/2020	1.20	NA	-0.31	1.51	NA
LN-1	10/5/2020	5.10	13.85	10.37	5.27	1.0
LN-2	10/5/2020	5.88	11.45	9.65	3.77	0.0
LN-3	10/5/2020	5.33	12.21	8.92	3.59	0.4
LN-4	10/5/2020	7.35	14.30	10.69	3.34	0.0
LN-5	10/5/2020	6.40	17.08	10.57	4.17	0.0
LN-6	10/5/2020	8.47	17.20	12.15	3.68	0.1
LN-7	10/5/2020	9.06	17.16	13.30	4.24	0.4
PER-4	10/5/2020	6.62	15.75	10.30	3.68	0.8
LPG-2	10/5/2020	2.91	9.65	7.05	4.14	0.0
DB-SW	10/5/2020	6.00	NA	-0.11	6.11	NA
LS-1R	10/5/2020	3.40	16.40	12.25	8.85	0.0
LS-2	10/5/2020	3.24	11.95	9.75	6.51	0.0
LS-3	10/5/2020	1.10	13.00	8.40	7.30	26.4
LS-4	10/5/2020	1.75	13.90	9.28	7.53	11.8
TM-6R	10/5/2020	5.77	20.00	14.26	8.49	1500.0
PL-1RR	10/5/2020	1.30	14.75	7.36	6.06	19.8
PL-3R	10/5/2020	3.94	19.20	10.16	6.22	111.3
PL-6RR	10/5/2020	1.35	15.00	6.88	5.53	4.8
PL-9R	10/5/2020	2.56	20.30	9.11	6.55	7.0
L1-SW	10/5/2020	0.80	NA	-0.20	1.00	NA
L1-1	10/5/2020	5.42	13.60	9.91	4.49	0.0
L1-2	10/5/2020	6.33	14.50	9.05	2.72	0.0
L1-3	10/5/2020	6.79	11.30	9.33	2.54	0.0
L1-4	10/5/2020	8.32	11.30	10.85	2.53	0.0
BG-2	10/5/2020	2.68	9.00	6.96	4.28	0.0
BG-3	10/5/2020	4.84	11.00	10.31	5.47	0.0
SP-1	10/5/2020	5.60	11.85	8.95	3.35	0.0
SP-2	10/5/2020	5.25	13.40	10.18	4.93	0.7
SP-3	10/5/2020	3.94	15.00	9.33	5.39	0.0
NM - Not Measured			LNAPL - Light non Aqueous Phase Liquids			
NA - Not Applicable			DTB - Depth to Bottom			
All Measurements are in feet			TOC - Top of Casing			

North Landfarm Groundwater Sampling Analytical Results - July 2020

[illegible]

North Landfarm Groundwater Sampling Analytical Results - July 2020

[illegible]

Metals Analysis

Arsenic	ug/l	3	-	ND (3.0)	4.6	8.2	16.5	3.9	9.8	5
Barium	ug/l	6000	-	ND (200)	ND (200)	ND (200)	275	ND (200)	ND (200)	ND (200)
Cadmium	ug/l	4	-	ND (3.0)	ND (3.0)	ND (3.0)	ND (3.0)	ND (3.0)	ND (3.0)	ND (3.0)
Chromium	ug/l	70	-	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Iron	ug/l	300	-	45100	25000	49600	44100	6010	41300	31300
Lead	ug/l	5	-	ND (3.0)	ND (3.0)	ND (3.0)	ND (3.0)	9.9	ND (3.0)	ND (3.0)
Manganese	ug/l	50	-	913	339	837	869	42.8	920	725
Mercury	ug/l	2	-	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Selenium	ug/l	40	-	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Silver	ug/l	40	-	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Sodium	ug/l	50000	-	252000	89600	184000	581000	38100	144000	86800

General Chemistry

Chloride	mg/l	250	-	321	158	208	1110	33	234	159
Fluoride	mg/l	2	-	1.5	0.97	0.81	0.77	ND (0.20)	1.1	1
Nitrogen, Ammonia	mg/l	3	-	4.6	2.7	4.9	2.4	ND (0.20)	3.4	3.5
Nitrogen, Nitrate	mg/l	10	-	<0.11 ^c	<0.11 ^c	<0.11 ^c	<0.11 ^c	4.6 ^c	<0.11 ^c	<0.11 ^c
Nitrogen, Nitrate + Nitrite	mg/l	10	-	<0.10	<0.10	<0.10	<0.10	4.6	<0.10	<0.10
Nitrogen, Nitrite	mg/l	1	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Phenols	mg/l	-	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Solids, Total Dissolved	mg/l	500	-	830	374	590	1940	256	622	446
Specific Conductivity	umhos/cm	-	-	1510	767	1240	3720	297	1180	808
Sulfate	mg/l	250	-	38.8	<2.0	<2.0	67.1	50.1	44.7	25.5
Total Organic Carbon	mg/l	-	-	9.9	3.7	18.1	4.7	4.5	6.2	6.6
Total Organic Halides	mg/l	-	-	0.11	0.11	0.07	0.13	<0.050	0.11	0.052

Footnotes:

^a Associated CCV outside of control limits low

^b Associated CCV outside of control limits high. sample was ND

^c Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

Table 3
Hess Corporation Former Port Reading Terminal
750 Cliff Road, Port Reading, New Jersey
North Landfarm Groundwater Sampling Analytical Results - October 2020

Client Sample ID:		NJ Groundwater Criteria (NJAC 7:9C 9/4/18) ¹	LN-1	LN-2	LN-3	LN-4	LN-6	LN-7	LN-5
Lab Sample ID:			JD14256-1	JD14256-2	JD14256-3	JD14256-4	JD14256-5	JD14256-6	JD14256-7
Date Sampled:			10/6/2020	10/6/2020	10/6/2020	10/6/2020	10/6/2020	10/6/2020	10/6/2020
Matrix:			Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
MS Volatiles (SW846 8260D)									
Acetone	ug/l	6000	ND (6.0) ^a	ND (6.0) ^a	ND (6.0) ^a	ND (6.0) ^a	ND (6.0) ^a	ND (6.0) ^a	ND (6.0) ^a
Benzene	ug/l	1	ND (0.43)	ND (0.43)	ND (0.43)	ND (0.43)	ND (0.43)	ND (0.43)	ND (0.43)
Bromochloromethane	ug/l	-	ND (0.48)	ND (0.48)	ND (0.48)	ND (0.48)	ND (0.48)	ND (0.48)	ND (0.48)
Bromodichloromethane	ug/l	1	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)
Bromoform	ug/l	4	ND (0.63)	ND (0.63)	ND (0.63)	ND (0.63)	ND (0.63)	ND (0.63)	ND (0.63)
Bromomethane	ug/l	10	ND (1.6)	ND (1.6)	ND (1.6)	ND (1.6)	ND (1.6)	ND (1.6)	ND (1.6)
2-Butanone (MEK)	ug/l	300	ND (6.9)	ND (6.9)	ND (6.9)	ND (6.9)	ND (6.9)	ND (6.9)	ND (6.9)
Carbon disulfide	ug/l	700	ND (0.46)	ND (0.46)	ND (0.46)	ND (0.46)	ND (0.46)	ND (0.46)	ND (0.46)
Carbon tetrachloride	ug/l	1	ND (0.55)	ND (0.55)	ND (0.55)	ND (0.55)	ND (0.55)	ND (0.55)	ND (0.55)
Chlorobenzene	ug/l	50	ND (0.56)	ND (0.56)	ND (0.56)	ND (0.56)	ND (0.56)	ND (0.56)	ND (0.56)
Chloroethane	ug/l	5	ND (0.73)	ND (0.73)	ND (0.73)	ND (0.73)	ND (0.73)	ND (0.73)	ND (0.73)
Chloroform	ug/l	70	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Chloromethane	ug/l	-	ND (0.76)	ND (0.76)	ND (0.76)	ND (0.76)	ND (0.76)	ND (0.76)	ND (0.76)
Cyclohexane	ug/l	-	ND (0.78)	ND (0.78)	ND (0.78)	ND (0.78)	ND (0.78)	ND (0.78)	ND (0.78)
1,2-Dibromo-3-chloropropane	ug/l	0.02	ND (1.2)	ND (1.2)	ND (1.2)	ND (1.2)	ND (1.2)	ND (1.2)	ND (1.2)
Dibromochloromethane	ug/l	1	ND (0.56)	ND (0.56)	ND (0.56)	ND (0.56)	ND (0.56)	ND (0.56)	ND (0.56)
1,2-Dibromoethane	ug/l	0.03	ND (0.48)	ND (0.48)	ND (0.48)	ND (0.48)	ND (0.48)	ND (0.48)	ND (0.48)
1,2-Dichlorobenzene	ug/l	600	ND (0.53)	ND (0.53)	ND (0.53)	ND (0.53)	ND (0.53)	ND (0.53)	ND (0.53)
1,3-Dichlorobenzene	ug/l	600	ND (0.54)	ND (0.54)	ND (0.54)	ND (0.54)	ND (0.54)	ND (0.54)	ND (0.54)
1,4-Dichlorobenzene	ug/l	75	ND (0.51)	ND (0.51)	ND (0.51)	ND (0.51)	ND (0.51)	ND (0.51)	ND (0.51)
Dichlorodifluoromethane	ug/l	1000	ND (1.4)	ND (1.4)	ND (1.4)	ND (1.4)	ND (1.4)	ND (1.4)	ND (1.4)
1,1-Dichloroethane	ug/l	50	ND (0.57)	ND (0.57)	ND (0.57)	ND (0.57)	ND (0.57)	ND (0.57)	ND (0.57)
1,2-Dichloroethane	ug/l	2	ND (0.60)	ND (0.60)	ND (0.60)	ND (0.60)	ND (0.60)	ND (0.60)	ND (0.60)
1,1-Dichloroethene	ug/l	1	ND (0.59)	ND (0.59)	ND (0.59)	ND (0.59)	ND (0.59)	ND (0.59)	ND (0.59)
cis-1,2-Dichloroethene	ug/l	70	ND (0.51)	ND (0.51)	ND (0.51)	ND (0.51)	ND (0.51)	ND (0.51)	ND (0.51)
trans-1,2-Dichloroethene	ug/l	100	ND (0.54)	ND (0.54)	ND (0.54)	ND (0.54)	ND (0.54)	ND (0.54)	ND (0.54)
1,2-Dichloropropane	ug/l	1	ND (0.51)	ND (0.51)	ND (0.51)	ND (0.51)	ND (0.51)	ND (0.51)	ND (0.51)
cis-1,3-Dichloropropene	ug/l	-	ND (0.47)	ND (0.47)	ND (0.47)	ND (0.47)	ND (0.47)	ND (0.47)	ND (0.47)
trans-1,3-Dichloropropene	ug/l	-	ND (0.43)	ND (0.43)	ND (0.43)	ND (0.43)	ND (0.43)	ND (0.43)	ND (0.43)
Ethylbenzene	ug/l	700	ND (0.60)	ND (0.60)	ND (0.60)	ND (0.60)	ND (0.60)	ND (0.60)	ND (0.60)
Freon 113	ug/l	20000	ND (1.9)	ND (1.9)	ND (1.9)	ND (1.9)	ND (1.9)	ND (1.9)	ND (1.9)
2-Hexanone	ug/l	40	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)
Isopropylbenzene	ug/l	700	ND (0.65)	ND (0.65)	ND (0.65)	ND (0.65)	ND (0.65)	ND (0.65)	ND (0.65)
Methyl Acetate	ug/l	7000	ND (0.80)	ND (0.80)	ND (0.80)	ND (0.80)	ND (0.80)	ND (0.80)	ND (0.80)
Methylcyclohexane	ug/l	-	ND (0.60)	ND (0.60)	ND (0.60)	ND (0.60)	ND (0.60)	ND (0.60)	ND (0.60)
Methyl Tert Butyl Ether	ug/l	70	ND (0.51)	ND (0.51)	ND (0.51)	ND (0.51)	ND (0.51)	ND (0.51)	ND (0.51)
4-Methyl-2-pentanone(MIBK)	ug/l	-	ND (1.9)	ND (1.9)	ND (1.9)	ND (1.9)	ND (1.9)	ND (1.9)	ND (1.9)
Methylene chloride	ug/l	3	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Styrene	ug/l	100	ND (0.49)	ND (0.49)	ND (0.49)	ND (0.49)	ND (0.49)	ND (0.49)	ND (0.49)
Tert Butyl Alcohol	ug/l	100	ND (5.8)	ND (5.8)	6.1 J	ND (5.8)	5.9 J	12.3	ND (5.8)
1,1,2,2-Tetrachloroethane	ug/l	1	ND (0.65)	ND (0.65)	ND (0.65)	ND (0.65)	ND (0.65)	ND (0.65)	ND (0.65)
Tetrachloroethene	ug/l	1	ND (0.90)	ND (0.90)	ND (0.90)	ND (0.90)	ND (0.90)	ND (0.90)	ND (0.90)
Toluene	ug/l	600	ND (0.53)	ND (0.53)	ND (0.53)	ND (0.53)	ND (0.53)	ND (0.53)	ND (0.53)
1,2,3-Trichlorobenzene	ug/l	-	ND (0.50) ^b	ND (0.50) ^b	ND (0.50) ^b	ND (0.50) ^b	ND (0.50) ^b	ND (0.50) ^b	ND (0.50) ^b
1,2,4-Trichlorobenzene	ug/l	9	ND (0.50) ^b	ND (0.50) ^b	ND (0.50) ^b	ND (0.50) ^b	ND (0.50) ^b	ND (0.50) ^b	ND (0.50) ^b
1,1,1-Trichloroethane	ug/l	30	ND (0.54)	ND (0.54)	ND (0.54)	ND (0.54)	ND (0.54)	ND (0.54)	ND (0.54)
1,1,2-Trichloroethane	ug/l	3	ND (0.53)	ND (0.53)	ND (0.53)	ND (0.53)	ND (0.53)	ND (0.53)	ND (0.53)
Trichloroethene	ug/l	1	ND (0.53)	ND (0.53)	ND (0.53)	ND (0.53)	ND (0.53)	ND (0.53)	ND (0.53)
Trichlorofluoromethane	ug/l	2000	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
Vinyl chloride	ug/l	1	ND (0.79)	ND (0.79)	ND (0.79)	ND (0.79)	ND (0.79)	ND (0.79)	ND (0.79)
m,p-Xylene	ug/l	-	ND (0.78)	ND (0.78)	ND (0.78)	ND (0.78)	ND (0.78)	ND (0.78)	ND (0.78)
o-Xylene	ug/l	-	ND (0.59)	ND (0.59)	ND (0.59)	ND (0.59)	ND (0.59)	ND (0.59)	ND (0.59)
Xylene (total)	ug/l	1000	ND (0.59)	ND (0.59)	ND (0.59)	ND (0.59)	ND (0.59)	ND (0.59)	ND (0.59)
MS Volatile TIC									
Total TIC, Volatile	ug/l	-	0	0	0	43 J	0	0	0
GC/LC Semi-volatiles (EPA 608.3)									
gamma-BHC (Lindane)	ug/l	0.03	ND (0.0047)	ND (0.0047)	ND (0.0047)	ND (0.0047)	ND (0.0047)	ND (0.0047)	ND (0.0047)
Endrin	ug/l	2	ND (0.0047)	ND (0.0047)	ND (0.0047)	ND (0.0047)	ND (0.0047)	ND (0.0047)	ND (0.0047)
Methoxychlor	ug/l	40	ND (0.0060)	ND (0.0060)	ND (0.0060)	ND (0.0060)	ND (0.0060)	ND (0.0060)	ND (0.0060)
Toxaphene	ug/l	2	ND (0.079)	ND (0.079)	ND (0.079)	ND (0.079)	ND (0.079)	ND (0.079)	ND (0.079)

Table 3
Hess Corporation Former Port Reading Terminal
750 Cliff Road, Port Reading, New Jersey
North Landfarm Groundwater Sampling Analytical Results

Client Sample ID:		NJ Groundwater Criteria (NJAC 7:9C 9/4/18)	LN-1	LN-2	LN-3	LN-4	LN-6	LN-7	LN-5
Lab Sample ID:			JD14256-1	JD14256-2	JD14256-3	JD14256-4	JD14256-5	JD14256-6	JD14256-7
Date Sampled:			10/6/2020	10/6/2020	10/6/2020	10/6/2020	10/6/2020	10/6/2020	10/6/2020
Matrix:			Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
GC/LC Semi-volatiles (SW846 8151A)									
2,4-D	ug/l	70	ND (0.066)	ND (0.066)	ND (0.066)	ND (0.066)	ND (0.066)	ND (0.066)	ND (0.066)
2,4,5-TP (Silvex)	ug/l	60	ND (0.042)	ND (0.042)	ND (0.042)	ND (0.042)	ND (0.042)	ND (0.042)	ND (0.042)
2,4,5-T	ug/l	-	ND (0.013)	ND (0.013)	ND (0.013)	ND (0.013)	ND (0.013)	ND (0.013)	ND (0.013)
Dalapon	ug/l	200	ND (0.021)	ND (0.021)	ND (0.021)	ND (0.021)	ND (0.021)	ND (0.021)	ND (0.021)
Dicamba	ug/l	-	ND (0.021)	ND (0.021)	ND (0.021)	ND (0.021)	ND (0.021)	ND (0.021)	ND (0.021)
Dichloroprop	ug/l	-	ND (0.057)	ND (0.057)	ND (0.057)	ND (0.057)	ND (0.057)	ND (0.057)	ND (0.057)
Dinoseb	ug/l	7	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.11)
MCPA	ug/l	-	ND (15)	ND (15)	ND (15)	ND (15)	ND (15)	ND (15)	ND (15)
MCPP	ug/l	7	ND (22)	ND (22)	ND (22)	ND (22)	ND (22)	ND (22)	ND (22)
Pentachlorophenol	ug/l	0.3	0.0087 J	0.0078 J	ND (0.0048)	0.011 J	ND (0.0048)	ND (0.0048)	0.013 J
2,4-DB	ug/l	-	ND (0.097)	ND (0.097)	ND (0.097)	ND (0.097)	ND (0.097)	ND (0.097)	ND (0.097)
Metals Analysis									
Arsenic	ug/l	3	5	4.9	11.2	16.6	11.4	7.8	ND (3.0)
Barium	ug/l	6000	ND (200)	ND (200)	ND (200)	557	ND (200)	ND (200)	ND (200)
Cadmium	ug/l	4	ND (3.0)	ND (3.0)	ND (3.0)	ND (3.0)	ND (3.0)	ND (3.0)	ND (3.0)
Chromium	ug/l	70	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Iron	ug/l	300	39900	24900	41600	29600	40900	31300	2000
Lead	ug/l	5	4.6	ND (3.0)	ND (3.0)	ND (3.0)	ND (3.0)	ND (3.0)	3.6
Manganese	ug/l	50	764	354	697	609	867	892	25.3
Mercury	ug/l	2	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Selenium	ug/l	40	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Silver	ug/l	40	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Sodium	ug/l	50000	177000	103000	175000	508000	146000	173000	46300
General Chemistry									
Chloride	mg/l	250	281	190	208	880	258	278	33.6
Fluoride	mg/l	2	1.5	1.1	0.89	0.83	1.3	1.3	ND (0.20)
Nitrogen, Ammonia	mg/l	3	4.5	2.7	4.8	2.2	4.1	3.2	ND (0.20)
Nitrogen, Nitrate	mg/l	10	ND (0.11) ^c	ND (0.11) ^c	ND (0.11) ^c	ND (0.11) ^c	0.11 ^c	ND (0.11) ^c	2.2 ^c
Nitrogen, Nitrate + Nitrite	mg/l	10	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	0.11	ND (0.10)	2.2
Nitrogen, Nitrite	mg/l	1	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)
Phenols	mg/l	-	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Solids, Total Dissolved	mg/l	500	ND (10)	80	80	760	10	110	80
Specific Conductivity	umhos /cm	-	1320	895	1250	3080	1170	1310	345
Sulfate	mg/l	250	13	ND (2.0)	ND (2.0)	2.2	30.9	4.1	80
Total Organic Carbon	mg/l	-	10.2	3.9	15	5.2	6.7	6	3.9
Total Organic Halides	mg/l	-	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)

Footnotes:

a Associated CCV outside of control limits low.

b Associated CCV outside of control limits high, sample was ND.

c Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

Table 4
Hess Corporation Former Port Reading Terminal
750 Cliff Road
Port Reading
South Landfarm Groundwater Sampling Analytical Results

Client Sample ID:		NJ Groundwater Criteria (NJAC 7:9C 9/4/18) ¹	NJ Interim Groundwater Criteria (NJAC 7:9C 1/17/19) ²	LS-1R	LS-2	LS-3	LS-4
Lab Sample ID:				JD10277-3	JD10277-4	JD10277-5	JD10277-6
Date Sampled:				7/16/2020	7/16/2020	7/16/2020	7/16/2020
Matrix:				Ground Water	Ground Water	Ground Water	Ground Water
MS Volatiles (SW846 8260C)							
Acetone	ug/l	6000	-	ND (6.0)	ND (6.0)	6.7 J	14.9
Benzene	ug/l	1	-	ND (0.43)	0.52	10	5.3
Bromochloromethane	ug/l	-	-	ND (0.48)	ND (0.48)	ND (0.48)	ND (0.48)
Bromodichloromethane	ug/l	1	-	ND (0.58)	ND (0.58)	ND (0.58)	ND (0.58)
Bromoform	ug/l	4	-	ND (0.63)	ND (0.63)	ND (0.63)	ND (0.63)
Bromomethane	ug/l	10	-	ND (1.6)	ND (1.6)	ND (1.6)	ND (1.6)
2-Butanone (MEK)	ug/l	300	-	ND (6.9)	ND (6.9)	ND (6.9)	ND (6.9)
Carbon disulfide	ug/l	700	-	ND (0.95)	ND (0.95)	ND (0.95)	ND (0.95)
Carbon tetrachloride	ug/l	1	-	ND (0.55)	ND (0.55)	ND (0.55)	ND (0.55)
Chlorobenzene	ug/l	50	-	ND (0.56)	ND (0.56)	ND (0.56)	ND (0.56)
Chloroethane	ug/l	-	5	ND (0.73)	ND (0.73)	ND (0.73)	ND (0.73)
Chloroform	ug/l	70	-	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Chloromethane	ug/l	-	-	ND (0.76)	ND (0.76)	ND (0.76)	ND (0.76)
Cyclohexane	ug/l	-	-	ND (0.78)	3.6 J	3.5 J	0.95 J
1,2-Dibromo-3-chloropropane	ug/l	0.02	-	ND (1.2)	ND (1.2)	ND (1.2)	ND (1.2)
Dibromochloromethane	ug/l	1	-	ND (0.56)	ND (0.56)	ND (0.56)	ND (0.56)
1,2-Dibromoethane	ug/l	0.03	-	ND (0.48)	ND (0.48)	ND (0.48)	ND (0.48)
1,2-Dichlorobenzene	ug/l	600	-	ND (0.53)	ND (0.53)	ND (0.53)	ND (0.53)
1,3-Dichlorobenzene	ug/l	600	-	ND (0.54)	ND (0.54)	ND (0.54)	ND (0.54)
1,4-Dichlorobenzene	ug/l	75	-	ND (0.51)	ND (0.51)	ND (0.51)	ND (0.51)
Dichlorodifluoromethane	ug/l	1000	-	ND (1.4)	ND (1.4)	ND (1.4)	ND (1.4)
1,1-Dichloroethane	ug/l	50	-	ND (0.57)	ND (0.57)	ND (0.57)	ND (0.57)
1,2-Dichloroethane	ug/l	2	-	ND (0.60)	ND (0.60)	ND (0.60)	ND (0.60)
1,1-Dichloroethene	ug/l	1	-	ND (0.59)	ND (0.59)	ND (0.59)	ND (0.59)
cis-1,2-Dichloroethene	ug/l	70	-	ND (0.51)	ND (0.51)	ND (0.51)	ND (0.51)
trans-1,2-Dichloroethene	ug/l	100	-	ND (0.54)	ND (0.54)	ND (0.54)	ND (0.54)
1,2-Dichloropropane	ug/l	1	-	ND (0.51)	ND (0.51)	ND (0.51)	ND (0.51)
cis-1,3-Dichloropropene	ug/l	-	-	ND (0.47)	ND (0.47)	ND (0.47)	ND (0.47)
trans-1,3-Dichloropropene	ug/l	-	-	ND (0.43)	ND (0.43)	ND (0.43)	ND (0.43)
Ethylbenzene	ug/l	700	-	ND (0.60)	ND (0.60)	ND (0.60)	ND (0.60)
Freon 113	ug/l	20000	-	ND (1.9)	ND (1.9)	ND (1.9)	ND (1.9)
2-Hexanone	ug/l	40	-	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)
Isopropylbenzene	ug/l	700	-	ND (0.65)	1.2	1.8	1.9
Methyl Acetate	ug/l	7000	-	ND (0.80)	ND (0.80)	ND (0.80)	ND (0.80)
Methylcyclohexane	ug/l	-	-	ND (0.60)	2.4 J	2.5 J	ND (0.60)
Methyl Tert Butyl Ether	ug/l	70	-	1.4	ND (0.51)	ND (0.51)	ND (0.51)
4-Methyl-2-pentanone(MIBK)	ug/l	-	-	ND (1.9)	ND (1.9)	ND (1.9)	ND (1.9)
Methylene chloride	ug/l	3	-	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Styrene	ug/l	100	-	ND (0.70)	ND (0.70)	ND (0.70)	ND (0.70)
Tert Butyl Alcohol	ug/l	100	-	ND (5.8)	ND (5.8)	977	32.5
1,1,2,2-Tetrachloroethane	ug/l	1	-	ND (0.65)	ND (0.65)	ND (0.65)	ND (0.65)
Tetrachloroethene	ug/l	1	-	ND (0.90)	ND (0.90)	ND (0.90)	ND (0.90)
Toluene	ug/l	600	-	ND (0.53)	ND (0.53)	ND (0.53)	ND (0.53)
1,2,3-Trichlorobenzene	ug/l	-	-	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,2,4-Trichlorobenzene	ug/l	9	-	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,1,1-Trichloroethane	ug/l	30	-	ND (0.54)	ND (0.54)	ND (0.54)	ND (0.54)
1,1,2-Trichloroethane	ug/l	3	-	ND (0.53)	ND (0.53)	ND (0.53)	ND (0.53)
Trichloroethene	ug/l	1	-	ND (0.53)	ND (0.53)	ND (0.53)	ND (0.53)
Trichlorofluoromethane	ug/l	2000	-	ND (0.84)	ND (0.84)	ND (0.84)	ND (0.84)
Vinyl chloride	ug/l	1	-	ND (0.79)	ND (0.79)	ND (0.79)	ND (0.79)
m,p-Xylene	ug/l	-	-	ND (0.78)	ND (0.78)	1.3	0.95 J
o-Xylene	ug/l	-	-	ND (0.59)	ND (0.59)	ND (0.59)	ND (0.59)
Xylene (total)	ug/l	1000	-	ND (0.59)	ND (0.59)	1.3	0.95 J
MS Volatile TIC							
Total TIC, Volatile	ug/l	-	-	0	6.8 J	164.9 J	22.1 J

Table 4
Hess Corporation Former Port Reading Terminal
750 Cliff Road
Port Reading
South Landfarm Groundwater Sampling Analytical Results

Client Sample ID:		NJ Groundwater Criteria (NJAC 7:9C 9/4/18) ¹	NJ Interim Groundwater Criteria (NJAC 7:9C 1/17/19) ²	LS-1R	LS-2	LS-3	LS-4
Lab Sample ID:				JD10277-3	JD10277-4	JD10277-5	JD10277-6
Date Sampled:				7/16/2020	7/16/2020	7/16/2020	7/16/2020
Matrix:				Ground Water	Ground Water	Ground Water	Ground Water
Metals Analysis							
Arsenic	ug/l	3	-	19.4	59.7	12.6	29.2
Barium	ug/l	6000	-	ND (200)	716	582	<200
Cadmium	ug/l	4	-	ND (3.0)	ND (3.0)	ND (3.0)	ND (3.0)
Chromium	ug/l	70	-	ND (10)	ND (10)	ND (10)	ND (10)
Lead	ug/l	5	-	ND (3.0)	ND (3.0)	ND (3.0)	ND (3.0)
Mercury	ug/l	2	-	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Selenium	ug/l	40	-	ND (10)	ND (10)	ND (10)	ND (10)
Silver	ug/l	40	-	ND (10)	ND (10)	ND (10)	ND (10)
General Chemistry							
Chloride	ug/l	250000	-	77500	283000	3130000	434000
Fluoride	ug/l	2000	-	810	<200	380	530
Nitrogen, Ammonia	ug/l	3000	-	1800	1700	11600	24200
Nitrogen, Nitrate	ug/l	10000	-	ND (110) ^a	ND (110) ^a	ND (110) ^a	ND (110) ^a
Nitrogen, Nitrate + Nitrite	ug/l	10000	-	ND (100)	ND (100)	ND (100)	ND (100)
Nitrogen, Nitrite	ug/l	1000	-	ND (10)	ND (10)	ND (10)	ND (10)
Phenols	ug/l	-	-	ND (200)	ND (200)	ND (200)	ND (200)
Solids, Total Dissolved	ug/l	500000	-	390000	778000	6490000	882000
Specific Conductivity	umhos/cm	-	-	644	1390	8950	1800
Sulfate	ug/l	250000	-	ND (2000)	ND (2000)	ND (2000)	ND (2000)
Total Organic Carbon	ug/l	-	-	11600	12900	57900	26500
Total Organic Halides	ug/l	-	-	ND (50)	110	620 ^b	ND (50)

Footnotes:

^a Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

^b Second column analysis indicates possible matrix interference and or possible high bias.

Table 5
Hess Corporation Former Port Reading Terminal
750 Cliff Road, Port Reading, New Jersey
South Landfarm Groundwater Sampling Analytical Results - October 2020

Client Sample ID:		NJ Groundwater Criteria (NJAC 7:9C 9/4/18)	LS-1R JD14484-3 10/8/2020	LS-2 JD14484-4 10/8/2020	LS-3 JD14484-5 10/8/2020	LS-4 JD14484-6 10/8/2020
Lab Sample ID:						
Date Sampled:						
Matrix:			Ground Water	Ground Water	Ground Water	Ground Water
MS Volatiles (SW846 8260D)						
Acetone	ug/l	6000	ND (6.0)	ND (6.0)	12.6	19.8
Benzene	ug/l	1	ND (0.43)	ND (0.43)	3.9	3.5
Bromochloromethane	ug/l	-	ND (0.48)	ND (0.48)	ND (0.48)	ND (0.48)
Bromodichloromethane	ug/l	1	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)
Bromoform	ug/l	4	ND (0.63)	ND (0.63)	ND (0.63)	ND (0.63)
Bromomethane	ug/l	10	ND (1.6)	ND (1.6)	ND (1.6)	ND (1.6)
2-Butanone (MEK)	ug/l	300	ND (6.9)	ND (6.9)	ND (6.9)	ND (6.9)
Carbon disulfide	ug/l	700	ND (0.46) ^a	ND (0.46) ^a	ND (0.46) ^a	ND (0.46) ^a
Carbon tetrachloride	ug/l	1	ND (0.55)	ND (0.55)	ND (0.55)	ND (0.55)
Chlorobenzene	ug/l	50	ND (0.56)	ND (0.56)	ND (0.56)	ND (0.56)
Chloroethane	ug/l	5	ND (0.73)	ND (0.73)	ND (0.73)	ND (0.73)
Chloroform	ug/l	70	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Chloromethane	ug/l	-	ND (0.76)	ND (0.76)	ND (0.76)	ND (0.76)
Cyclohexane	ug/l	-	ND (0.78)	2.8 J	3.8 J	1.3 J
1,2-Dibromo-3-chloropropane	ug/l	0.02	ND (1.2)	ND (1.2)	ND (1.2)	ND (1.2)
Dibromochloromethane	ug/l	1	ND (0.56)	ND (0.56)	ND (0.56)	ND (0.56)
1,2-Dibromoethane	ug/l	0.03	ND (0.48)	ND (0.48)	ND (0.48)	ND (0.48)
1,2-Dichlorobenzene	ug/l	600	ND (0.53)	ND (0.53)	ND (0.53)	ND (0.53)
1,3-Dichlorobenzene	ug/l	600	ND (0.54)	ND (0.54)	ND (0.54)	ND (0.54)
1,4-Dichlorobenzene	ug/l	75	ND (0.51)	ND (0.51)	ND (0.51)	ND (0.51)
Dichlorodifluoromethane	ug/l	1000	ND (1.4) ^a	ND (1.4) ^a	ND (1.4) ^a	ND (1.4) ^a
1,1-Dichloroethane	ug/l	50	ND (0.57)	ND (0.57)	ND (0.57)	ND (0.57)
1,2-Dichloroethane	ug/l	2	ND (0.60)	ND (0.60)	ND (0.60)	ND (0.60)
1,1-Dichloroethene	ug/l	1	ND (0.59)	ND (0.59)	ND (0.59)	ND (0.59)
cis-1,2-Dichloroethene	ug/l	70	ND (0.51)	ND (0.51)	ND (0.51)	ND (0.51)
trans-1,2-Dichloroethene	ug/l	100	ND (0.54)	ND (0.54)	ND (0.54)	ND (0.54)
1,2-Dichloropropane	ug/l	1	ND (0.51)	ND (0.51)	ND (0.51)	ND (0.51)
cis-1,3-Dichloropropene	ug/l	-	ND (0.47)	ND (0.47)	ND (0.47)	ND (0.47)
trans-1,3-Dichloropropene	ug/l	-	ND (0.43)	ND (0.43)	ND (0.43)	ND (0.43)
Ethylbenzene	ug/l	700	ND (0.60)	ND (0.60)	ND (0.60)	ND (0.60)
Freon 113	ug/l	20000	ND (1.9)	ND (1.9)	ND (1.9)	ND (1.9)
2-Hexanone	ug/l	40	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)
Isopropylbenzene	ug/l	700	ND (0.65)	0.71 J	2.1	1.2
Methyl Acetate	ug/l	7000	ND (0.80)	ND (0.80)	ND (0.80)	ND (0.80)
Methylcyclohexane	ug/l	-	ND (0.60)	1.9 J	3.2 J	ND (0.60)
Methyl Tert Butyl Ether	ug/l	70	1.6	ND (0.51)	ND (0.51)	ND (0.51)
4-Methyl-2-pentanone(MIBK)	ug/l	-	ND (1.9)	ND (1.9)	ND (1.9)	ND (1.9)
Methylene chloride	ug/l	3	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Styrene	ug/l	100	ND (0.49)	ND (0.49)	ND (0.49)	ND (0.49)
Tert Butyl Alcohol	ug/l	100	ND (5.8)	6.1 J	1070	82.9
1,1,2,2-Tetrachloroethane	ug/l	1	ND (0.65)	ND (0.65)	ND (0.65)	ND (0.65)
Tetrachloroethene	ug/l	1	ND (0.90)	ND (0.90)	ND (0.90)	ND (0.90)
Toluene	ug/l	600	ND (0.53)	ND (0.53)	ND (0.53)	ND (0.53)
1,2,3-Trichlorobenzene	ug/l	-	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,2,4-Trichlorobenzene	ug/l	9	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,1,1-Trichloroethane	ug/l	30	ND (0.54)	ND (0.54)	ND (0.54)	ND (0.54)
1,1,2-Trichloroethane	ug/l	3	ND (0.53)	ND (0.53)	ND (0.53)	ND (0.53)
Trichloroethene	ug/l	1	ND (0.53)	ND (0.53)	ND (0.53)	ND (0.53)
Trichlorofluoromethane	ug/l	2000	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
Vinyl chloride	ug/l	1	ND (0.79)	ND (0.79)	ND (0.79)	ND (0.79)
m,p-Xylene	ug/l	-	ND (0.78)	ND (0.78)	1.1	1.5
o-Xylene	ug/l	-	ND (0.59)	ND (0.59)	ND (0.59)	ND (0.59)
Xylene (total)	ug/l	1000	ND (0.59)	ND (0.59)	1.1	1.5
MS Volatile TIC						
Total TIC, Volatile	ug/l	-	0	0	102.7 J	44.1 J
Metals Analysis						
Arsenic	ug/l	3	11.9	43.6	12.7	24.2
Barium	ug/l	6000	ND (200)	824	597	ND (200)
Cadmium	ug/l	4	ND (3.0)	ND (3.0)	ND (3.0)	ND (3.0)
Chromium	ug/l	70	ND (10)	ND (10)	ND (10)	ND (10)
Iron	ug/l	300	11400	2580	84000	6740
Lead	ug/l	5	ND (3.0)	ND (3.0)	ND (3.0)	ND (3.0)
Manganese	ug/l	50	2710	172	1390	154
Mercury	ug/l	2	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Selenium	ug/l	40	ND (10)	ND (10)	ND (10)	ND (10)
Silver	ug/l	40	19	ND (10)	ND (10)	ND (10)
Sodium	ug/l	50000	82500	174000	1660000	376000
General Chemistry						
Chloride	mg/l	250	83.8	368	3340	514
Fluoride	mg/l	2	0.86	ND (0.20)	0.37	0.55
Nitrogen, Ammonia	mg/l	3	1.4	1.8	9.5	25.1
Nitrogen, Nitrate	mg/l	10	ND (0.11) ^b	ND (0.11) ^b	ND (0.11) ^b	ND (0.11) ^b
Nitrogen, Nitrate + Nitrite	mg/l	10	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Nitrogen, Nitrite	mg/l	1	ND (0.010)	0.014	0.011	ND (0.010)
Phenols	mg/l	-	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Solids, Total Dissolved	mg/l	500	250	953	4630	1080
Specific Conductivity	umhos	-	681	1740	10000	3530
Sulfate	mg/l	250	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)
Total Organic Carbon	mg/l	-	14.2	16	61	35.8
Total Organic Halides	mg/l	-	0.094	0.058	0.34	0.14

Footnotes:

a Associated CCV outside of control limits low.

b Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

Table 6
Hess Corporation Former Port Reading Terminal
750 Cliff Road, Port Reading, New Jersey
No. 1 Landfarm Groundwater Sampling Analytical Results

Client Sample ID:		NJ Groundwater	NJ Interim	L1-1	L1-2	L1-3	L1-4	BG-2	BG-3
Lab Sample ID:		Criteria (NJAC	Criteria (NJAC	JD10216-3	JD10216-4	JD10216-5	JD10216-6	JD10216-7	JD10216-8
Date Sampled:		7:9C 9/4/18) ¹	7:9C 1/17/19) ²	7/15/2020	7/15/2020	7/15/2020	7/15/2020	7/15/2020	7/15/2020
Matrix:				Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
MS Volatiles (SW846 8260C)									
Acetone	ug/l	6000	-	ND (6.0)	ND (6.0)	ND (6.0)	ND (6.0)	ND (6.0)	ND (6.0)
Benzene	ug/l	1	-	ND (0.43)	ND (0.43)	ND (0.43)	ND (0.43)	ND (0.43)	ND (0.43)
Bromochloromethane	ug/l	-	-	ND (0.48)	ND (0.48)	ND (0.48)	ND (0.48)	ND (0.48)	ND (0.48)
Bromodichloromethane	ug/l	1	-	ND (0.58)	ND (0.58)	ND (0.58)	ND (0.58)	ND (0.58)	ND (0.58)
Bromoform	ug/l	4	-	ND (0.63)	ND (0.63)	ND (0.63)	ND (0.63)	ND (0.63)	ND (0.63)
Bromomethane	ug/l	10	-	ND (1.6) ^a	ND (1.6) ^a	ND (1.6) ^a	ND (1.6) ^a	ND (1.6) ^a	ND (1.6) ^a
2-Butanone (MEK)	ug/l	300	-	ND (6.9)	ND (6.9)	ND (6.9)	ND (6.9)	ND (6.9)	ND (6.9)
Carbon disulfide	ug/l	700	-	ND (0.95) ^a	ND (0.95) ^a	ND (0.95) ^a	ND (0.95) ^a	ND (0.95) ^a	ND (0.95) ^a
Carbon tetrachloride	ug/l	1	-	ND (0.55)	ND (0.55)	ND (0.55)	ND (0.55)	ND (0.55)	ND (0.55)
Chlorobenzene	ug/l	50	-	ND (0.56)	14	ND (0.56)	ND (0.56)	ND (0.56)	ND (0.56)
Chloroethane	ug/l	-	5	ND (0.73)	ND (0.73)	ND (0.73)	ND (0.73)	ND (0.73)	ND (0.73)
Chloroform	ug/l	70	-	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Chloromethane	ug/l	-	-	ND (0.76)	ND (0.76)	ND (0.76)	ND (0.76)	ND (0.76)	ND (0.76)
Cyclohexane	ug/l	-	-	ND (0.78)	ND (0.78)	ND (0.78)	ND (0.78)	ND (0.78)	ND (0.78)
1,2-Dibromo-3-chloropropane	ug/l	0.02	-	ND (1.2)	ND (1.2)	ND (1.2)	ND (1.2)	ND (1.2)	ND (1.2)
Dibromochloromethane	ug/l	1	-	ND (0.56)	ND (0.56)	ND (0.56)	ND (0.56)	ND (0.56)	ND (0.56)
1,2-Dibromoethane	ug/l	0.03	-	ND (0.48)	ND (0.48)	ND (0.48)	ND (0.48)	ND (0.48)	ND (0.48)
1,2-Dichlorobenzene	ug/l	600	-	ND (0.53)	ND (0.53)	ND (0.53)	ND (0.53)	ND (0.53)	ND (0.53)
1,3-Dichlorobenzene	ug/l	600	-	ND (0.54)	0.64 J	ND (0.54)	ND (0.54)	ND (0.54)	ND (0.54)
1,4-Dichlorobenzene	ug/l	75	-	ND (0.51)	1.5	ND (0.51)	ND (0.51)	ND (0.51)	ND (0.51)
Dichlorodifluoromethane	ug/l	1000	-	ND (1.4)	ND (1.4)	ND (1.4)	ND (1.4)	ND (1.4)	ND (1.4)
1,1-Dichloroethane	ug/l	50	-	ND (0.57)	ND (0.57)	ND (0.57)	ND (0.57)	ND (0.57)	ND (0.57)
1,2-Dichloroethane	ug/l	2	-	ND (0.60)	ND (0.60)	ND (0.60)	ND (0.60)	ND (0.60)	ND (0.60)
1,1-Dichloroethene	ug/l	1	-	ND (0.59)	ND (0.59)	ND (0.59)	ND (0.59)	ND (0.59)	ND (0.59)
cis-1,2-Dichloroethene	ug/l	70	-	ND (0.51)	ND (0.51)	ND (0.51)	ND (0.51)	ND (0.51)	ND (0.51)
trans-1,2-Dichloroethene	ug/l	100	-	ND (0.54)	ND (0.54)	ND (0.54)	ND (0.54)	ND (0.54)	ND (0.54)
1,2-Dichloropropane	ug/l	1	-	ND (0.51)	ND (0.51)	ND (0.51)	ND (0.51)	ND (0.51)	ND (0.51)
cis-1,3-Dichloropropene	ug/l	-	-	ND (0.47)	ND (0.47)	ND (0.47)	ND (0.47)	ND (0.47)	ND (0.47)
trans-1,3-Dichloropropene	ug/l	-	-	ND (0.43)	ND (0.43)	ND (0.43)	ND (0.43)	ND (0.43)	ND (0.43)
Ethylbenzene	ug/l	700	-	ND (0.60)	ND (0.60)	ND (0.60)	ND (0.60)	ND (0.60)	ND (0.60)
Freon 113	ug/l	20000	-	ND (1.9)	ND (1.9)	ND (1.9)	ND (1.9)	ND (1.9)	ND (1.9)
2-Hexanone	ug/l	40	-	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)
Isopropylbenzene	ug/l	700	-	ND (0.65)	ND (0.65)	ND (0.65)	ND (0.65)	ND (0.65)	ND (0.65)
Methyl Acetate	ug/l	7000	-	ND (0.80)	ND (0.80)	ND (0.80)	ND (0.80)	ND (0.80)	ND (0.80)
Methylcyclohexane	ug/l	-	-	ND (0.60)	ND (0.60)	ND (0.60)	ND (0.60)	ND (0.60)	ND (0.60)
Methyl Tert Butyl Ether	ug/l	70	-	ND (0.51)	ND (0.51)	ND (0.51)	ND (0.51)	ND (0.51)	ND (0.51)
4-Methyl-2-pentanone(MIBK)	ug/l	-	-	ND (1.9)	ND (1.9)	ND (1.9)	ND (1.9)	ND (1.9)	ND (1.9)
Methylene chloride	ug/l	3	-	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Styrene	ug/l	100	-	ND (0.70)	ND (0.70)	ND (0.70)	ND (0.70)	ND (0.70)	ND (0.70)
Tert Butyl Alcohol	ug/l	100	-	ND (5.8)	ND (5.8)	ND (5.8)	ND (5.8)	ND (5.8)	ND (5.8)
1,1,2,2-Tetrachloroethane	ug/l	1	-	ND (0.65)	ND (0.65)	ND (0.65)	ND (0.65)	ND (0.65)	ND (0.65)
Tetrachloroethene	ug/l	1	-	ND (0.90)	ND (0.90)	ND (0.90)	ND (0.90)	ND (0.90)	ND (0.90)
Toluene	ug/l	600	-	ND (0.53)	ND (0.53)	ND (0.53)	ND (0.53)	ND (0.53)	ND (0.53)
1,2,3-Trichlorobenzene	ug/l	-	-	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,2,4-Trichlorobenzene	ug/l	9	-	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,1,1-Trichloroethane	ug/l	30	-	ND (0.54)	ND (0.54)	ND (0.54)	ND (0.54)	ND (0.54)	ND (0.54)
1,1,2-Trichloroethane	ug/l	3	-	ND (0.53)	ND (0.53)	ND (0.53)	ND (0.53)	ND (0.53)	ND (0.53)
Trichloroethene	ug/l	1	-	ND (0.53)	ND (0.53)	ND (0.53)	ND (0.53)	ND (0.53)	ND (0.53)
Trichlorofluoromethane	ug/l	2000	-	ND (0.84)	ND (0.84)	ND (0.84)	ND (0.84)	ND (0.84)	ND (0.84)
Vinyl chloride	ug/l	1	-	ND (0.79)	ND (0.79)	ND (0.79)	ND (0.79)	ND (0.79)	ND (0.79)
m,p-Xylene	ug/l	-	-	ND (0.78)	ND (0.78)	ND (0.78)	ND (0.78)	ND (0.78)	ND (0.78)
o-Xylene	ug/l	-	-	ND (0.59)	ND (0.59)	ND (0.59)	ND (0.59)	ND (0.59)	ND (0.59)
Xylene (total)	ug/l	1000	-	ND (0.59)	ND (0.59)	ND (0.59)	ND (0.59)	ND (0.59)	ND (0.59)
MS Volatile TIC									
Total TIC, Volatile	ug/l	-	-	0	5.6 J	0	0	0	0
MS Semi-volatiles (SW846 8270D)									
2-Chlorophenol	ug/l	40	-	ND (0.80)	ND (0.80)	ND (0.82)	ND (0.82)	ND (0.80)	ND (0.79)
4-Chloro-3-methyl phenol	ug/l	-	100	ND (0.87)	ND (0.87)	ND (0.89)	ND (0.89)	ND (0.87)	ND (0.86)
2,4-Dichlorophenol	ug/l	20	-	ND (1.2)	ND (1.2)	ND (1.3)	ND (1.3)	ND (1.2)	ND (1.2)
2,4-Dimethylphenol	ug/l	100	-	ND (2.4)	ND (2.4)	ND (2.4)	ND (2.4)	ND (2.4)	ND (2.3)
2,4-Dinitrophenol	ug/l	40	-	ND (1.5) ^b	ND (1.5) ^b	ND (1.6) ^b	ND (1.6) ^b	ND (1.5) ^b	ND (1.5) ^b
2-Methylphenol	ug/l	50	-	ND (0.86)	ND (0.87)	ND (0.89)	ND (0.89)	ND (0.86)	ND (0.85)
3&4-Methylphenol	ug/l	50	-	ND (0.85)	ND (0.86)	ND (0.88)	ND (0.88)	ND (0.85)	ND (0.85)
2-Nitrophenol	ug/l	-	-	ND (0.93) ^b	ND (0.94) ^b	ND (0.96) ^b	ND (0.96) ^b	ND (0.93)	ND (0.92)
4-Nitrophenol	ug/l	-	-	ND (1.1) ^b	ND (1.1) ^b	ND (1.2) ^b	ND (1.2) ^b	ND (1.1) ^b	ND (1.1) ^b
Phenol	ug/l	2000	-	ND (0.38)	ND (0.38)	ND (0.39)	ND (0.39)	ND (0.38)	ND (0.38)
2,3,4,6-Tetrachlorophenol	ug/l	200	-	ND (1.4)	ND (1.4)	ND (1.5)	ND (1.5)	ND (1.4)	ND (1.4)
2,4,5-Trichlorophenol	ug/l	700	-	ND (1.3)	ND (1.3)	ND (1.3)	ND (1.3)	ND (1.3)	ND (1.3)
2,4,6-Trichlorophenol	ug/l	20	-	ND (0.90)	ND (0.91)	ND (0.92)	ND (0.92)	ND (0.90)	ND (0.89)
Acenaphthene	ug/l	400	-	ND (0.19)	ND (0.19)	ND (0.19)	ND (0.19)	ND (0.19)	ND (0.18)
Acenaphthylene	ug/l	-	100	ND (0.13)	ND (0.13)	ND (0.14)	ND (0.14)	ND (0.13)	ND (0.13)
Acetophenone	ug/l	700	-	ND (0.20)	ND (0.20)	ND (0.21)	ND (0.21)	ND (0.20)	ND (0.20)
Anthracene	ug/l	2000	-	ND (0.20)	ND (0.21)	ND (0.21)	ND (0.21)	ND (0.20)	ND (0.20)

Table 6
Hess Corporation Former Port Reading Terminal
750 Cliff Road, Port Reading, New Jersey
No. 1 Landfarm Groundwater Sampling Analytical Results

Client Sample ID:		NJ Groundwater	NJ Interim	L1-1	L1-2	L1-3	L1-4	BG-2	BG-3
Lab Sample ID:		Criteria (NJAC	Criteria (NJAC	JD10216-3	JD10216-4	JD10216-5	JD10216-6	JD10216-7	JD10216-8
Date Sampled:		7:9C 9/4/18) ¹	7:9C 1/17/19) ²	7/15/2020	7/15/2020	7/15/2020	7/15/2020	7/15/2020	7/15/2020
Matrix:				Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
Atrazine	ug/l	3	-	ND (0.43) ^b	ND (0.44) ^b	ND (0.45) ^b	ND (0.45) ^b	ND (0.43) ^b	ND (0.43) ^b
Benzaldehyde	ug/l	-	-	ND (0.28)	ND (0.28)	ND (0.29)	ND (0.29)	ND (0.28)	ND (0.28)
Benzo(g,h,i)perylene	ug/l	-	100	ND (0.33)	ND (0.33)	ND (0.34)	ND (0.34)	ND (0.33)	ND (0.33)
4-Bromophenyl phenyl ether	ug/l	-	-	ND (0.39)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.39)	ND (0.39)
Butyl benzyl phthalate	ug/l	100	-	ND (0.44) ^b	ND (0.45) ^b	ND (0.46) ^b	ND (0.46) ^b	ND (0.44) ^b	ND (0.44) ^b
1,1'-Biphenyl	ug/l	400	-	ND (0.21)	ND (0.21)	ND (0.21)	ND (0.21)	ND (0.21)	ND (0.20)
2-Chloronaphthalene	ug/l	600	-	ND (0.23)	ND (0.23)	ND (0.24)	ND (0.24)	ND (0.23)	ND (0.23)
4-Chloroaniline	ug/l	30	-	ND (0.33)	ND (0.33)	ND (0.34)	ND (0.34)	ND (0.33)	ND (0.33)
Carbazole	ug/l	-	-	ND (0.22)	ND (0.22)	ND (0.23)	ND (0.23)	ND (0.22)	ND (0.22)
Caprolactam	ug/l	4000	-	ND (0.63)	ND (0.64)	ND (0.65)	ND (0.65)	ND (0.63)	ND (0.62)
Chrysene	ug/l	5	-	ND (0.17)	ND (0.17)	ND (0.18)	ND (0.18)	ND (0.17)	ND (0.17)
bis(2-Chloroethoxy)methane	ug/l	-	-	ND (0.27)	ND (0.27)	ND (0.28)	ND (0.28)	ND (0.27)	ND (0.27)
bis(2-Chloroethyl)ether	ug/l	7	-	ND (0.24)	ND (0.24)	ND (0.25)	ND (0.25)	ND (0.24)	ND (0.24)
2,2'-Oxybis(1-chloropropane)	ug/l	300	-	ND (0.39)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.39)	ND (0.39)
4-Chlorophenyl phenyl ether	ug/l	-	-	ND (0.36)	ND (0.36)	ND (0.37)	ND (0.37)	ND (0.36)	ND (0.35)
2,4-Dinitrotoluene	ug/l	-	-	ND (0.54)	ND (0.54)	ND (0.55)	ND (0.55)	ND (0.54)	ND (0.53)
2,6-Dinitrotoluene	ug/l	-	-	ND (0.46)	ND (0.47)	ND (0.48)	ND (0.48)	ND (0.46)	ND (0.46)
3,3'-Dichlorobenzidine	ug/l	30	-	ND (0.49) ^b	ND (0.50) ^b	ND (0.51) ^b	ND (0.51) ^b	ND (0.49)	ND (0.49)
Dibenzofuran	ug/l	-	-	ND (0.21)	ND (0.22)	ND (0.22)	ND (0.22)	ND (0.21)	ND (0.21)
Di-n-butyl phthalate	ug/l	700	-	ND (0.48) ^b	ND (0.49) ^b	ND (0.50) ^b	ND (0.50) ^b	ND (0.48) ^b	ND (0.48) ^b
Di-n-octyl phthalate	ug/l	100	-	ND (0.23) ^b	ND (0.23) ^b	ND (0.23) ^b	ND (0.23) ^b	ND (0.23) ^b	ND (0.22) ^b
Diethyl phthalate	ug/l	6000	-	ND (0.25)	ND (0.26)	ND (0.26)	ND (0.26)	ND (0.25)	ND (0.25)
Dimethyl phthalate	ug/l	-	100	ND (0.21)	ND (0.21)	ND (0.22)	ND (0.22)	ND (0.21)	ND (0.21)
bis(2-Ethylhexyl)phthalate	ug/l	3	-	ND (1.6)	ND (1.6)	ND (1.7)	ND (1.7)	1.8 J ^c	ND (1.6) ^b
Fluoranthene	ug/l	300	-	ND (0.17)	ND (0.17)	ND (0.17)	ND (0.17)	ND (0.17)	ND (0.16)
Fluorene	ug/l	300	-	ND (0.17)	ND (0.17)	ND (0.17)	ND (0.17)	ND (0.17)	ND (0.16)
Hexachlorocyclopentadiene	ug/l	40	-	ND (2.7)	ND (2.7)	ND (2.8)	ND (2.8)	ND (2.7)	ND (2.7)
Hexachloroethane	ug/l	7	-	ND (0.38)	ND (0.38)	ND (0.39)	ND (0.39)	ND (0.38)	ND (0.37)
Isophorone	ug/l	40	-	ND (0.27)	ND (0.27)	ND (0.28)	ND (0.28)	ND (0.27)	ND (0.27)
2-Methylnaphthalene	ug/l	30	-	ND (0.20)	ND (0.21)	ND (0.21)	ND (0.21)	ND (0.20)	ND (0.20)
2-Nitroaniline	ug/l	-	-	ND (0.27) ^b	ND (0.27) ^b	ND (0.28) ^b	ND (0.28) ^b	ND (0.27) ^b	ND (0.27) ^b
3-Nitroaniline	ug/l	-	-	ND (0.38)	ND (0.38)	ND (0.39)	ND (0.39)	ND (0.38)	ND (0.37)
4-Nitroaniline	ug/l	-	-	ND (0.43)	ND (0.43)	ND (0.44)	ND (0.44)	ND (0.43)	ND (0.42)
Naphthalene	ug/l	300	-	ND (0.23)	ND (0.23)	ND (0.23)	ND (0.23)	ND (0.23)	ND (0.22)
Nitrobenzene	ug/l	6	-	ND (0.62)	ND (0.63)	ND (0.64)	ND (0.64)	ND (0.62)	ND (0.62)
N-Nitroso-di-n-propylamine	ug/l	10	-	ND (0.47)	ND (0.47)	ND (0.48)	ND (0.48)	ND (0.47)	ND (0.46)
N-Nitrosodiphenylamine	ug/l	10	-	ND (0.22)	ND (0.22)	ND (0.22)	ND (0.22)	ND (0.22)	ND (0.21)
Phenanthrene	ug/l	-	-	ND (0.17)	ND (0.17)	ND (0.18)	ND (0.18)	ND (0.17)	ND (0.17)
Pyrene	ug/l	200	-	ND (0.21)	0.22 J	ND (0.22)	ND (0.22)	ND (0.21)	ND (0.21)
1,2,4,5-Tetrachlorobenzene	ug/l	-	-	ND (0.36)	ND (0.36)	ND (0.37)	ND (0.37)	ND (0.36)	ND (0.36)
MS Semi-volatiles (SW846 8270D BY SIM)									
4,6-Dinitro-o-cresol	ug/l	0.7	-	ND (0.15) ^b	ND (0.15) ^b	ND (0.15) ^b	ND (0.15) ^b	ND (0.15) ^b	ND (0.15) ^b
Pentachlorophenol	ug/l	0.3	-	ND (0.13) ^d	ND (0.13) ^d	ND (0.13) ^d	ND (0.13) ^d	ND (0.13) ^d	ND (0.12) ^d
Benzo(a)anthracene	ug/l	0.1	-	ND (0.022)	ND (0.022)	ND (0.023)	ND (0.023)	ND (0.022)	ND (0.022)
Benzo(a)pyrene	ug/l	0.1	-	ND (0.032)	ND (0.033)	ND (0.033)	ND (0.033)	ND (0.032)	ND (0.032)
Benzo(b)fluoranthene	ug/l	0.2	-	ND (0.042)	ND (0.043)	ND (0.043)	ND (0.043)	ND (0.042)	ND (0.042)
Benzo(k)fluoranthene	ug/l	0.5	-	ND (0.049)	ND (0.049)	ND (0.050)	ND (0.050)	ND (0.049)	ND (0.048)
Dibenzo(a,h)anthracene	ug/l	0.3	-	ND (0.049)	ND (0.049)	ND (0.050)	ND (0.050)	ND (0.049)	ND (0.048)
Hexachlorobenzene	ug/l	0.02	-	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.011)
Hexachlorobutadiene	ug/l	1	-	ND (0.049)	ND (0.049)	ND (0.050)	ND (0.050)	ND (0.049)	ND (0.048)
Indeno(1,2,3-cd)pyrene	ug/l	0.2	-	ND (0.049)	ND (0.049)	ND (0.050)	ND (0.050)	ND (0.049)	ND (0.048)
1,4-Dioxane	ug/l	0.4	-	ND (0.049) ^b	ND (0.049) ^b	ND (0.050) ^b	ND (0.050) ^b	ND (0.049) ^b	ND (0.048) ^b
MS Semi-volatile TIC									
Total TIC, Semi-Volatile	ug/l	-	-	0	4.6 J	0	0	12.6 J	0
Metals Analysis									
Aluminum	ug/l	200	-	1660	ND (200)	983	ND (200)	ND (200)	ND (200)
Antimony	ug/l	6	-	ND (6.0)	ND (6.0)	ND (6.0)	ND (6.0)	ND (6.0)	ND (6.0)
Arsenic	ug/l	3	-	1.1	27.3	12.5	2	15	30.1
Barium	ug/l	6000	-	ND (200)	202	ND (200)	ND (200)	ND (200)	321
Beryllium	ug/l	1	-	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Cadmium	ug/l	4	-	ND (3.0)	ND (3.0)	ND (3.0)	ND (3.0)	ND (3.0)	ND (3.0)
Calcium	ug/l	-	-	ND (5000)	29600	10400	58300	6730	34700
Chromium	ug/l	70	-	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Cobalt	ug/l	100	-	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)
Copper	ug/l	1300	-	10.9	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Iron	ug/l	300	-	1820	23000	6650	586	4450	67000
Lead	ug/l	5	-	3.5	ND (3.0)	3.5	ND (3.0)	ND (3.0)	ND (3.0)
Magnesium	ug/l	-	-	ND (5000)	18100	7250	12500	ND (5000)	8500
Manganese	ug/l	50	-	16.7	259	204	37.1	43.9	425
Mercury	ug/l	2	-	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Nickel	ug/l	100	-	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Potassium	ug/l	-	-	ND (10000)	11300	ND (10000)	ND (10000)	ND (10000)	ND (10000)
Selenium	ug/l	40	-	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)

Table 6
Hess Corporation Former Port Reading Terminal
750 Cliff Road, Port Reading, New Jersey
No. 1 Landfarm Groundwater Sampling Analytical Results

Client Sample ID:				L1-1	L1-2	L1-3	L1-4	BG-2	BG-3
Lab Sample ID:		NJ Groundwater	NJ Interim	JD10216-3	JD10216-4	JD10216-5	JD10216-6	JD10216-7	JD10216-8
Date Sampled:		Criteria (NJAC	Criteria (NJAC	7/15/2020	7/15/2020	7/15/2020	7/15/2020	7/15/2020	7/15/2020
Matrix:		7:9C 9/4/18) ¹	7:9C 1/17/19) ²	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
Silver	ug/l	40	-	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Sodium	ug/l	50000	-	51100	163000	56600	<10000	32300	32900
Thallium	ug/l	2	-	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Vanadium	ug/l	-	-	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)
Zinc	ug/l	2000	-	84.5	23.8	29.1	ND (20)	59.2	21.2
General Chemistry									
Cyanide	ug/l	100	-	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Nitrogen, Ammonia	ug/l	3000	-	ND (200)	1900	490	ND (200)	490	680
Phenols	ug/l	-	-	ND (200)	ND (200)	ND (200)	ND (200)	ND (200)	ND (200)

Footnotes:

^a Associated CCV outside of control limits low.

^b Associated CCV outside of control limits high, sample was ND.

^c Associated CCV outside of control limits high. Estimated value, due to corresponding failure in the batch associated CCV.

^d Associated CCV outside of control limits low. Low-level verification was analyzed to demonstrate system suitability to detect affected analytes. Sample was ND.

No 1 Landfarm Groundwater Sampling Analytical Results - October 2020

[illegible]

No 1 Landfarm Groundwater Sampling Analytical Results - October 2020

Table 7
Hess Corporation Former Port Reading Terminal
750 Cliff Road, Port Reading, New Jersey
No 1 Landfarm Groundwater Sampling Analytical Results - October 2020

Client Sample ID:		NJ Groundwater	TB	FB	L1-1	L1-2	L1-3	L1-4	BG-2	BG-3
Lab Sample ID:		Criteria (NJAC	JD14366-1	JD14366-2	JD14366-3	JD14366-4	JD14366-5	JD14366-6	JD14366-7	JD14366-8
Date Sampled:		7:9C 9/4/18)	10/7/2020	10/7/2020	10/7/2020	10/7/2020	10/7/2020	10/7/2020	10/7/2020	10/7/2020
Matrix:			Trip Blank Water	Field Blank Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
Nitrobenzene	ug/l	6	-	ND (0.64)	ND (0.63)	ND (0.63)	ND (0.63)	ND (0.64)	ND (0.63)	ND (0.68)
N-Nitroso-di-n-propylamine	ug/l	10	-	ND (0.48)	ND (0.47)	ND (0.47)	ND (0.47)	ND (0.48)	ND (0.47)	ND (0.51)
N-Nitrosodiphenylamine	ug/l	10	-	ND (0.22)	ND (0.22)	ND (0.22)	ND (0.22)	ND (0.22)	ND (0.22)	ND (0.23)
Phenanthrene	ug/l	-	-	ND (0.18)	ND (0.17)	ND (0.17)	ND (0.17)	ND (0.18)	ND (0.17)	ND (0.18)
Pyrene	ug/l	200	-	ND (0.22)	ND (0.21)	0.30 J	ND (0.21)	ND (0.22)	ND (0.21)	0.32 J
1,2,4,5-Tetrachlorobenzene	ug/l	-	-	ND (0.37)	ND (0.36)	ND (0.36)	ND (0.36)	ND (0.37)	ND (0.36)	ND (0.39)
MS Semi-volatiles (SW846 8270E BY SIM)										
4,6-Dinitro-o-cresol	ug/l	0.7	-	ND (0.15)	ND (0.15) ^c	ND (0.15) ^c	ND (0.15) ^c	ND (0.15) ^c	ND (0.15) ^c	ND (0.16) ^c
Pentachlorophenol	ug/l	0.3	-	ND (0.13)	ND (0.13) ^c	ND (0.13) ^c	ND (0.13) ^c	ND (0.13) ^c	ND (0.13) ^c	ND (0.14) ^c
Benzo(a)anthracene	ug/l	0.1	-	ND (0.022)	ND (0.022)	ND (0.022)	ND (0.022)	ND (0.023)	ND (0.022)	ND (0.024)
Benzo(a)pyrene	ug/l	0.1	-	ND (0.032)	ND (0.032)	ND (0.032)	ND (0.032)	ND (0.033)	ND (0.032)	ND (0.035)
Benzo(b)fluoranthene	ug/l	0.2	-	ND (0.042)	ND (0.042)	ND (0.042)	ND (0.042)	ND (0.043)	ND (0.042)	ND (0.046)
Benzo(k)fluoranthene	ug/l	0.5	-	ND (0.049)	ND (0.049)	ND (0.049)	ND (0.049)	ND (0.050)	ND (0.049)	ND (0.053)
Dibenzo(a,h)anthracene	ug/l	0.3	-	ND (0.049)	ND (0.049)	ND (0.049)	ND (0.049)	ND (0.050)	ND (0.049)	ND (0.053)
Hexachlorobenzene	ug/l	0.02	-	ND (0.011) ^b	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.012)
Hexachlorobutadiene	ug/l	1	-	ND (0.049) ^b	ND (0.049)	ND (0.049)	ND (0.049)	ND (0.050)	ND (0.049)	ND (0.053)
Indeno(1,2,3-cd)pyrene	ug/l	0.2	-	ND (0.049)	ND (0.049)	ND (0.049)	ND (0.049)	ND (0.050)	ND (0.049)	ND (0.053)
1,4-Dioxane	ug/l	0.4	-	ND (0.049)	ND (0.049)	ND (0.049)	ND (0.049)	ND (0.050)	ND (0.049)	ND (0.053)
MS Semi-volatile TIC										
Total TIC, Semi-Volatile	ug/l	-	-	0	0	38.2 J	0	0	50.6 J	0
Metals Analysis										
Aluminum	ug/l	200	-	ND (200)	4270	ND (200)	212	ND (200)	201	ND (200)
Arsenic	ug/l	3	-	ND (3.0)	3	29.3	28.2	ND (3.0)	19.2	12.6
Barium	ug/l	6000	-	ND (200)	ND (200)	ND (200)	421	ND (200)	ND (200)	ND (200)
Cadmium	ug/l	4	-	ND (3.0)	ND (3.0)	ND (3.0)	ND (3.0)	ND (3.0)	ND (3.0)	ND (3.0)
Chromium	ug/l	70	-	ND (10)	11.6	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Iron	ug/l	300	-	ND (100)	6770	19400	24700	230	4970	16400
Lead	ug/l	5	-	ND (3.0)	10.7	ND (3.0)	ND (3.0)	ND (3.0)	ND (3.0)	ND (3.0)
Manganese	ug/l	50	-	ND (15)	37	257	596	36	49.2	285
Mercury	ug/l	2	-	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.60)	ND (0.20)
Selenium	ug/l	40	-	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Silver	ug/l	40	-	ND (100)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Sodium	ug/l	50000	-	ND (10000)	44000	153000	118000	ND (10000)	49900	40900
General Chemistry										
Cyanide	mg/l	0.1	-	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)
Nitrogen, Ammonia	mg/l	3	-	ND (0.20)	ND (0.20)	1.8	2	ND (0.20)	0.75	0.6
Phenols	mg/l	-	-	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	0.42

Footnotes:

^a Associated CCV outside of control limits high, sample was ND.

^b Associated CCV outside of control limits low. Low-level verification was analyzed to demonstrate system suitability to detect affected analytes. Sample was ND.

^c This compound is outside the control limits biased high in the associated BS and BSD.

Table 8
Hess Corporation Former Port Reading Terminal
750 Cliff Road, Port Reading, New Jersey
No 1 Landfarm Leachate Analytical Results - January 2021

Client Sample ID:		NJ Groundwater Criteria	L1-LEACHATE
Lab Sample ID:			JD18999-1
Date Sampled:			12/11/2020
Matrix:			Water
MS Volatiles (EPA 624.1)			
Benzene	ug/l	1	ND (0.34)
Bromodichloromethane	ug/l	1	ND (0.35)
Bromoform	ug/l	4	ND (0.60)
Bromomethane	ug/l	10	ND (0.87)
Carbon tetrachloride	ug/l	1	ND (0.55)
Chlorobenzene	ug/l	50	ND (0.33)
Chloroethane	ug/l	-	ND (0.54)
2-Chloroethyl vinyl ether	ug/l	-	ND (2.5)
Chloroform	ug/l	70	ND (0.50)
Chloromethane	ug/l	-	ND (0.78)
Dibromochloromethane	ug/l	1	ND (0.43)
1,2-Dichlorobenzene	ug/l	600	ND (0.30)
1,3-Dichlorobenzene	ug/l	600	ND (0.66)
1,4-Dichlorobenzene	ug/l	75	ND (0.63)
Dichlorodifluoromethane	ug/l	1000	ND (1.4)
1,1-Dichloroethane	ug/l	50	ND (0.42)
1,2-Dichloroethane	ug/l	2	ND (0.39)
1,1-Dichloroethene	ug/l	1	ND (0.59)
cis-1,2-Dichloroethene	ug/l	70	ND (0.51)
trans-1,2-Dichloroethene	ug/l	100	ND (0.46)
1,2-Dichloropropane	ug/l	1	ND (0.42)
cis-1,3-Dichloropropene	ug/l	-	ND (0.47)
trans-1,3-Dichloropropene	ug/l	-	ND (0.56)
Ethylbenzene	ug/l	700	ND (0.30)
Methyl Tert Butyl Ether	ug/l	70	0.56 J
Methylene chloride	ug/l	3	ND (0.41)
Tertiary Butyl Alcohol	ug/l	100	ND (5.8)
1,1,2,2-Tetrachloroethane	ug/l	1	ND (0.32)
Tetrachloroethene	ug/l	1	ND (0.41)
Toluene	ug/l	600	ND (0.36)
1,1,1-Trichloroethane	ug/l	30	ND (0.54)
1,1,2-Trichloroethane	ug/l	3	ND (0.41)
Trichloroethene	ug/l	1	ND (0.43)
Trichlorofluoromethane	ug/l	2000	ND (0.33)
Vinyl chloride	ug/l	1	ND (0.79)
Xylenes (total)	ug/l	1000	ND (0.35)
MS Volatile TIC			
Total TIC, Volatile	ug/l	-	9.7 J

Table 8
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750 Cliff Road, Port Reading, New Jersey
No 1 Landfarm Leachate Analytical Results - January 2021

Client Sample ID:		NJ Groundwater Criteria	L1-LEACHATE
Lab Sample ID:			JD18999-1
Date Sampled:			12/11/2020
Matrix:			Water
MS Semi-volatiles (EPA 625.1)			
2-Chlorophenol	ug/l	40	ND (0.82)
4-Chloro-3-methyl phenol	ug/l	-	ND (0.89)
2,4-Dichlorophenol	ug/l	20	ND (1.3)
2,4-Dimethylphenol	ug/l	100	ND (2.4)
2,4-Dinitrophenol	ug/l	40	ND (1.6)
4,6-Dinitro-o-cresol	ug/l	0.7	ND (1.3)
2-Nitrophenol	ug/l	-	ND (0.96)
4-Nitrophenol	ug/l	-	ND (1.2)
Pentachlorophenol	ug/l	0.3	ND (1.4)
Phenol	ug/l	2000	ND (0.39) ^a
2,4,5-Trichlorophenol	ug/l	700	ND (1.3)
2,4,6-Trichlorophenol	ug/l	20	ND (0.92)
Acenaphthene	ug/l	400	ND (0.19)
Acenaphthylene	ug/l	-	ND (0.14)
Anthracene	ug/l	2000	ND (0.21)
Benzidine	ug/l	20	ND (0.90) ^b
Benzo(a)anthracene	ug/l	0.1	ND (0.20)
Benzo(a)pyrene	ug/l	0.1	ND (0.21)
Benzo(b)fluoranthene	ug/l	0.2	ND (0.21)
Benzo(g,h,i)perylene	ug/l	-	ND (0.34)
Benzo(k)fluoranthene	ug/l	0.5	ND (0.21)
4-Bromophenyl phenyl ether	ug/l	-	ND (0.40)
Butyl benzyl phthalate	ug/l	100	1.0 J
2-Chloronaphthalene	ug/l	600	ND (0.24)
4-Chloroaniline	ug/l	30	ND (0.34)
Chrysene	ug/l	5	ND (0.18)
bis(2-Chloroethoxy)methane	ug/l	-	ND (0.28)
bis(2-Chloroethyl)ether	ug/l	7	ND (0.25)
2,2'-Oxybis(1-chloropropane)	ug/l	300	ND (0.40)
4-Chlorophenyl phenyl ether	ug/l	-	ND (0.37)
1,2-Dichlorobenzene	ug/l	600	ND (0.17)
1,2-Diphenylhydrazine	ug/l	20	ND (0.19)
1,3-Dichlorobenzene	ug/l	600	ND (0.19)
1,4-Dichlorobenzene	ug/l	75	ND (0.17)
2,4-Dinitrotoluene	ug/l	-	ND (0.55)
2,6-Dinitrotoluene	ug/l	-	ND (0.48)
3,3'-Dichlorobenzidine	ug/l	30	ND (0.51)
Dibenzo(a,h)anthracene	ug/l	0.3	ND (0.33)
Di-n-butyl phthalate	ug/l	700	ND (0.50)
Di-n-octyl phthalate	ug/l	100	0.92 J
Diethyl phthalate	ug/l	6000	ND (0.26)
Dimethyl phthalate	ug/l	-	ND (0.22)
bis(2-Ethylhexyl)phthalate	ug/l	3	2.3
Fluoranthene	ug/l	300	ND (0.17)
Fluorene	ug/l	300	ND (0.17)
Hexachlorobenzene	ug/l	0.02	ND (0.33)
Hexachlorobutadiene	ug/l	1	ND (0.49)
Hexachlorocyclopentadiene	ug/l	40	ND (2.8)
Hexachloroethane	ug/l	7	ND (0.39)
Indeno(1,2,3-cd)pyrene	ug/l	0.2	ND (0.33)
Isophorone	ug/l	40	ND (0.28) ^a
Naphthalene	ug/l	300	ND (0.23)
Nitrobenzene	ug/l	6	ND (0.64)
n-Nitrosodimethylamine	ug/l	0.8	ND (0.82)
N-Nitroso-di-n-propylamine	ug/l	10	ND (0.48) ^a
N-Nitrosodi-n-butylamine	ug/l	-	ND (0.60)
N-Nitrosodiethylamine	ug/l	-	ND (0.24)
N-Nitrosodiphenylamine	ug/l	10	ND (0.22)
N-Nitrosopyrrolidine	ug/l	-	ND (0.73) ^a
Pentachlorobenzene	ug/l	-	ND (0.24)
Phenanthrene	ug/l	-	ND (0.18)
Pyrene	ug/l	200	ND (0.22)
1,2,4,5-Tetrachlorobenzene	ug/l	-	ND (0.37)
1,2,4-Trichlorobenzene	ug/l	9	ND (0.25)
2,3,7,8-TCDD	ug/l	0.00001	ND (5.0)

Table 8
Hess Corporation Former Port Reading Terminal
750 Cliff Road, Port Reading, New Jersey
No 1 Landfarm Leachate Analytical Results - January 2021

Client Sample ID:		NJ Groundwater Criteria	L1-LEACHATE
Lab Sample ID:			JD18999-1
Date Sampled:			12/11/2020
Matrix:			Water
GC/LC Semi-volatiles (EPA 608.3)			
Aldrin	ug/l	0.04	ND (0.0037)
alpha-BHC	ug/l	0.02	ND (0.0059)
beta-BHC	ug/l	0.04	ND (0.0066)
delta-BHC	ug/l	-	ND (0.0056)
gamma-BHC (Lindane)	ug/l	0.03	ND (0.0047)
Chlordane	ug/l	0.5	ND (0.23)
Dieldrin	ug/l	0.03	ND (0.0032)
4,4'-DDD	ug/l	0.1	ND (0.0056)
4,4'-DDE	ug/l	0.1	ND (0.0032)
4,4'-DDT	ug/l	0.1	ND (0.0060)
Endrin	ug/l	2	ND (0.0047)
Endosulfan sulfate	ug/l	40	ND (0.0048)
Endrin aldehyde	ug/l	-	ND (0.0064)
Endosulfan-I	ug/l	40	ND (0.0038)
Endosulfan-II	ug/l	40	ND (0.0044)
Heptachlor	ug/l	0.05	ND (0.0044)
Heptachlor epoxide	ug/l	0.2	ND (0.0033)
Methoxychlor	ug/l	40	ND (0.0060)
Toxaphene	ug/l	2	ND (0.079)
Aroclor 1016	ug/l	0.5	ND (0.13)
Aroclor 1221	ug/l	0.5	ND (0.39)
Aroclor 1232	ug/l	0.5	ND (0.11)
Aroclor 1242	ug/l	0.5	ND (0.15)
Aroclor 1248	ug/l	0.5	ND (0.076)
Aroclor 1254	ug/l	0.5	ND (0.11)
Aroclor 1260	ug/l	0.5	ND (0.11)
GC/LC Semi-volatiles (SW846 8081B)			
Mirex	ug/l	0.1	ND (0.0023)
GC/LC Semi-volatiles (SW846 8141B)			
Chlorpyrifos	ug/l	20	ND (0.55)
Demeton	ug/l	1	ND (0.76)
Ethyl Parathion	ug/l	4	ND (0.53)
Malathion	ug/l	100	ND (0.41)
Methyl Azinphos (Guthion)	ug/l	-	ND (0.37) °
Metals Analysis			
Antimony	ug/l	6	<6.0
Arsenic	ug/l	3	2.9
Beryllium	ug/l	1	<1.0
Cadmium	ug/l	4	<3.0
Chromium	ug/l	70	<10
Copper	ug/l	1300	14.6
Lead	ug/l	5	3.2
Mercury	ug/l	2	<0.20
Nickel	ug/l	100	252
Selenium	ug/l	40	<10
Silver	ug/l	40	<10
Thallium	ug/l	2	<0.50
Zinc	ug/l	2000	365
General Chemistry			
Chloride	mg/l	250	16.7
Cyanide	mg/l	0.1	<0.010
Phenols	mg/l	-	<0.20

Footnotes:

a Associated CCV outside of control limits high, sample was ND.

b This compound in BS,BSD is outside in house QC limits bias low.

c Associated BS outside of control limits high, sample was ND. Associated CCV outside of control limits high, sample was ND.

APPENDIX A

Low Flow Groundwater Sampling Sheets

Earth Systems

NJDEP Certification No. 13040

Date: 10/4/20 Job #/Name: 7R Weather: SUN 70 Personnel: KJ
 Equipment: HORIBA U52 Serial Number: 43606

pH							
Time	Temperature	Zero Pt (pH 4)	Lot / Exp Date	Span Pt (pH 10)	Lot / Exp Date	Initial Check (must be within +/- 0.1 units or need to recalibrate)	Lot / Exp Date
		Initial Reading	Adjusted	Initial Reading	Adjusted	(pH 7 - acceptable range 6.9-7.1)	Recalibrate (Y/N)*
8:00	18.19	4.01	5/6/21	10.22	6/7/21	7.03	10/31/21
			4.00		10.00		N
pH 3 Hour Check (*2-point calibration only needs to be conducted if check value is out of range)							
Time (3 hr check)	Temperature	Zero Pt * (pH 4)	Lot / Exp Date	Span Pt * (pH 10)	Lot / Exp Date	Check (must be within +/- 0.2 units or need to recalibrate)	Lot / Exp Date
						(pH 7 - acceptable range 6.8-7.2)	
11:00	25.22	4.04	4.00	10.01	10.00	7.00	N

Conductivity						
Time	Zero (Ambient Air)	Lot / Exp Date	Span (1.413 ms/cm)	Lot / Exp Date	Check (must be within +/- 1% or need to recalibrate)	Lot / Exp Date
					(use 1.413 ms/cm - acceptable range 1.398 - 1.427)	
	Initial Reading	Adjusted	Initial Reading	Adjusted	Check Value	Recalibrate (Y/N)
8:05				03/31/21		
		0.003	0.006	1.16	1.39	N

Turbidity						
Time	Zero	Lot / Exp Date	Span (100 NTU)	Lot / Exp Date	Check - must be within +/- 10% or need to recalibrate	Lot / Exp Date
					(use 100 NTU - acceptable range 90-110 NTU)	
	Initial Reading	Adjusted	Initial Reading	Adjusted	Check Value	Recalibrate (Y/N)
8:19	0.0	0.0	90.1	07/22/21	100	
					100	N

Dissolved Oxygen					
Time	Zero (0% Solution)	Lot / Exp Date	Air Span (100%)	Lot / Exp Date	Check - reading must be 0.3mg/L or less
					(0% Solution)
	Initial Reading	Adjusted	Check Value	Recalibrate (Y/N)	Check Value
8:15	0.0	11/24/20	103.71		
		0.0		N	0.0

Earth Systems

NJDEP Certification No. 13040

Date: 10/6/20 Job #/Name: A Port Reading - North Weather: 67° Sunny Personnel: ALF
 Equipment: YSI Serial Number: 4703

pH							
Time	Temperature	Zero Pt (pH 4)	Lot / Exp Date	Span Pt (pH 10)	Lot / Exp Date	Initial Check (must be within +/- 0.1 units or need to recalibrate) (pH 7 - acceptable range 6.9-7.1)	Lot / Exp Date
		Initial Reading	Adjusted	Initial Reading	Adjusted		Recalibrate (Y/N)*
7:57		3.91	4.0	10.78	10.00	7.03	✓
pH 3 Hour Check (*2-point calibration only needs to be conducted if check value is out of range)							
Time (3 hr check)	Temperature	Zero Pt* (pH 4)	Lot / Exp Date	Span Pt* (pH 10)	Lot / Exp Date	Check (must be within +/-0.2 units or need to recalibrate) (pH 7 - acceptable range 6.8-7.2)	Lot / Exp Date
8:03		4.08	4.00	10.00	10.00	7.00	✓

Conductivity						
Time	Zero (Ambient Air)	Lot / Exp Date	Span (1.413 ms/cm)	Lot / Exp Date	Check (must be within +/-1% or need to recalibrate) (use 1.413 ms/cm - acceptable range 1.398 - 1.427)	Lot / Exp Date
	Initial Reading	Adjusted	Initial Reading	Adjusted	Check Value	Recalibrate (Y/N)
8:00	0.000	0.000	1.56	1.41	1.41	✓

Turbidity						
Time	Zero	Lot / Exp Date	Span (100 NTU)	Lot / Exp Date	Check - must be within +/- 10% or need to recalibrate (use 100 NTU - acceptable range 90-110 NTU)	Lot / Exp Date
	Initial Reading	Adjusted	Initial Reading	Adjusted	Check Value	Recalibrate (Y/N)
8:03	0.5	0.0	97.2	100	1.00	✓

Dissolved Oxygen					
Time	Zero (0% Solution)	Lot / Exp Date	Air Span (100%)	Lot / Exp Date	Check - reading must be 0.3mg/L or less (0% Solution)
	Initial Reading	Adjusted	Check Value	Recalibrate (Y/N)	Check Value
8:03	0.1	0	100	✓	0.1

LOW FLOW SAMPLING DATA SHEET

SHEET ____ OF ____

SITE: <u>Port Reading</u> DATE: <u>10/6/2020</u> WEATHER: <u>68°F</u>	CONSULTING FIRM: <u>EARTH SYSTEMS</u> FIELD PERSONNEL: <u>AE</u> CERTIFICATION #: <u>13040</u>
--	---

MONITOR WELL #: <u>LN-1</u> WELL PERMIT #: <u>2600008130</u>	WELL DEPTH: <u>18'</u> WELL DIAMETER: <u>4</u> Inches	SCREENED/OPEN INTERVAL: <u>8-18</u>
---	--	--

PID/FID READINGS (ppm): BACKGROUND: <u>0.0</u> BENEATH OUTER CAP: <u>0.0</u> BENEATH INNER CAP: <u>6.8</u>	PUMP INTAKE DEPTH: <u>10.5</u> ft below TOC DEPTH TO WATER BEFORE PUMP INSTALLATION: <u>5.24</u> ft below TOC
---	--

TIME	PURGING	SAMPLING	pH (pH units) (SM 4500H+B)		SPECIFIC CONDUCTIVITY (mS/cm) (EPA 120.1)		REDOX POTENTIAL (mv)		DISSOLVED OXYGEN (mg/l) (SM 4500OG)		TURBIDITY (NTU) (EPA 180.1)		TEMPERATURE (degrees C) (SM 2550)		PUMPING RATE (ml/min)	DEPTH TO WATER (ft below TOC)
			READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*		
940	X		6.27	NA	1.37	NA	-76	NA	7.36	NA	62.9	NA	20.93	NA	300	5.40
945	X		6.31	0.04	1.36	1%	-90	14	6.56	10%	71.9	14%	21.51	3%		5.45
950	X		6.31	-	1.36	-	-94	4	6.07	7%	62.1	13%	21.77	1%		5.50
955	X		6.32	0.01	1.36	-	-95	1	5.60	8%	40.2	35%	22.02	1%		5.57
1000	X		6.32	-	1.36	-	-95	-	5.24	6%	31.6	21%	22.52	2%		5.67
1005	X		6.32	-	1.36	-	-96	1	4.96	5%	34.3	9%	22.48	1%		
1010	X		6.33	0.01	1.36	-	-98	2	4.54	8%	37.3	9%	22.60	1%		
1015	X		6.33	-	1.36	-	-99	1	4.28	6%	41.0	10%	22.67	1%		
1020		X	6.33	-	1.36	-	-99	-	4.14	3%	44.1	7%	22.72	1%		

COMMENTS:

*INDICATOR PARAMETERS HAVE STABILIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN: ± 0.1 for pH; ± 3% for Specific Conductivity and Temperature;
 ± 10 mv for Redox Potential; and ± 10% for Dissolved Oxygen and Turbidity

SITE: Former Hess - Port Reading CONSULTING FIRM: EARTH SYSTEMS
 DATE: 10/6/20 FIELD PERSONNEL: AE
 WEATHER: 68° Sunny CERTIFICATION #: 13040

MONITOR WELL #: LN - 2 WELL DEPTH: 13.75 SCREENED/OPEN INTERVAL: 7.75 - 13.75
 WELL PERMIT #: 2600007562 WELL DIAMETER: 4" Inches

PID/FID READINGS (ppm): BACKGROUND: 0.6 PUMP INTAKE DEPTH: 9.25 ft below TOC
 BENEATH OUTER CAP: 6.6 DEPTH TO WATER BEFORE PUMP INSTALLATION: 5.98 ft below TOC
 BENEATH INNER CAP: 0.0

TIME	PURGING	SAMPLING	pH (pH units) (SM 4500H-B)		SPECIFIC CONDUCTIVITY (mS/cm) (EPA 120)		REDOX POTENTIAL (mv)		DISSOLVED OXYGEN (mg/l) (SM 4500OG)		TURBIDITY (NTU) (EPA 180.1)		TEMPERATURE (degrees C) (SM 2550)		PUMPING RATE (ml/min)	DEPTH TO WATER (ft below TOC)
			READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*		
13:45	X		6.83	NA	0.905	NA	-113	NA	2.70	NA	9.4	NA	22.92	NA	289	6.05
13:50	X		6.85	0.02	0.928	2.5%	-120	-7	1.80	33%	8.4	10.6%	22.89	0.1%		6.09
13:55	X		6.88	0.03	0.929	0.4%	-127	-7	1.46	17%	18.7	100%	22.85	0.1%		6.10
14:00	X		6.89	0.01	0.916	0.8%	-131	-4	1.32	9.5%	34.4	86%	22.90	0.2%		
14:05	X		6.90	0.01	0.906	1.0%	-134	-3	1.22	7.5%	35.4	29%	22.90	0%		
14:10	X		6.90	0.00	0.897	0.9%	-136	-2	1.11	9.0%	32.1	7.0%	22.97	0.3%		
14:15	X		6.91	0.01	0.891	0.6%	-137	-1	1.08	2.7%	38.3	5.6%	22.98	0.4%		
14:20	X		6.92	0.01	0.885	0.5%	-138	-1	1.03	3.7%	27.7	8.5	23.05	0.3%		

COMMENTS:

*INDICATOR PARAMETERS HAVE STABILIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN: ± 0.1 for pH; ± 3% for Specific Conductivity and Temperature;
 ± 10 mv for Redox Potential; and ± 10% for Dissolved Oxygen and Turbidity

SITE: Former Hess - Port Reading
 DATE: 10/6/20
 WEATHER: SUNNY 65°F

CONSULTING FIRM: EARTH SYSTEMS
 FIELD PERSONNEL: K.J.
 CERTIFICATION #: 13040

MONITOR WELL #: LN-3 WELL DEPTH: 11.5 ft
 WELL PERMIT #: 2600007563 WELL DIAMETER: 4 Inches
 SCREENED/OPEN INTERVAL: 5.3 - 11.2
5.75 - 11.75

PID/FID READINGS (ppm): BACKGROUND: 0.0
 BENEATH OUTER CAP: 0.0
 BENEATH INNER CAP: 0.4

PUMP INTAKE DEPTH: 7.0 ft below TOC
 DEPTH TO WATER BEFORE PUMP INSTALLATION: 5.40 ft below TOC

TIME	PURGING	SAMPLING	pH (pH units) (SM 4500H+8)		SPECIFIC CONDUCTIVITY (mS/cm) (EPA 120.1)		REDOX POTENTIAL (mv)		DISSOLVED OXYGEN (mg/l) (SM 4500OG)		TURBIDITY (NTU) (EPA 180.1)		TEMPERATURE (degrees C) (SM 2550)		PUMPING RATE (ml/min)	DEPTH TO WATER (ft below TOC)
			READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*		
1400	X		6.87	NA	0.908	NA	-74	NA	2.15	NA	142	NA	23.67	NA	300	5.73'
1405	X		6.71	0.16	0.903	0.5%	-61	13	2.12	0.9%	78.5	45%	23.55	0.5%	300	5.80'
1410	X		6.69	0.02	0.906	0.3%	-66	5	2.12	0.0%	50.5	35%	23.51	0.2%	300	5.80'
1415	X		6.69	0.00	0.909	0.3%	-77	11	2.12	0.0%	55.3	9.5%	23.57	0.3%	300	5.80'
1420	X		6.69	0.00	0.915	0.6%	-86	9	2.12	0.0%	56.5	2.1%	23.61	0.2%	300	5.80'
1425	X		6.69	0.00	0.913	0.2%	-89	3	2.12	0.0%	58.8	4.1%	23.66	0.2%	300	5.80'
1430	X		6.70	0.01	0.916	0.3%	-96	7	2.12	0.0%	54.3	2.6%	23.76	0.4%	300	5.80'
1435	X		6.70	0.00	0.915	0.1%	-100	4	2.12	0.0%	52.9	2.5%	23.72	0.2%	300	5.80'

COMMENTS:

*INDICATOR PARAMETERS HAVE STABILIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN: ± 0.1 for pH; ± 3% for Specific Conductivity and Temperature; ± 10 mv for Redox Potential; and ± 10% for Dissolved Oxygen and Turbidity

LOW FLOW SAMPLING DATA SHEET

SHEET 1 OF 1

SITE: Former Hess - Port Reading
 DATE: 10/6/20
 WEATHER: SUNNY 65°F
 CONSULTING FIRM: EARTH SYSTEMS
 FIELD PERSONNEL: KJ
 CERTIFICATION #: 13040

MONITOR WELL #: LN - 4 WELL DEPTH: 14.65'
 WELL PERMIT #: 2600008131 WELL DIAMETER: 4" Inches
 SCREENED/OPEN INTERVAL: 4-14'
5.5-16.5

PID/FID READINGS (ppm): BACKGROUND: 0.0
 BENEATH OUTER CAP: 0.0
 BENEATH INNER CAP: 0.0
 PUMP INTAKE DEPTH: 8.0' ft below TOC
 DEPTH TO WATER BEFORE PUMP INSTALLATION: 7.40' ft below TOC

TIME	PURGING	SAMPLING	pH (pH units) (SM 4500H-B)		SPECIFIC CONDUCTIVITY (mS/cm) (EPA 120.1)		REDOX POTENTIAL (mv)		DISSOLVED OXYGEN (mg/l) (SM 4500OG)		TURBIDITY (NTU) (EPA 180.1)		TEMPERATURE (degrees C) (SM 2550)		PUMPING RATE (ml/min)	DEPTH TO WATER (ft below TOC)
			READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*		
11:50	X		6.71	NA	2.65	NA	-132	NA	1.51	NA	35.6	NA	23.46	NA	300	7.45
11:55	X		6.86	0.15	2.92	10%	-132	0	0.35	80%	41.6	17%	23.16	1.3%	300	7.45
12:00	X		6.91	0.05	3.08	54%	-140	8	0.15	57%	31.1	25%	23.07	0.4%	300	7.45
12:05	X		6.93	0.02	3.12	1.2%	-145	5	0.13	13%	22.9	26%	23.18	0.4%	300	7.45
12:10	X		6.95	0.02	3.12	0.0%	-148	3	0.12	8.8%	19.7	14%	23.13	0.2%	300	7.45
12:15	X		6.96	0.01	3.12	0.0%	-151	3	0.12	0.0%	17.9	9.1%	23.14	0.1%	300	7.45
12:20	X		6.98	0.02	3.15	0.9%	-155	4	0.12	0.0%	16.2	9.4%	23.12	0.0%	300	7.45
12:25	X		6.99	0.01	3.18	1.0%	-157	3	0.12	0.0%	15.5	4.3%	23.23	0.4%	300	7.45
12:30	X		7.00	0.01	3.20	0.8%	-159	2	0.12	0.0%	14.9	3.8%	23.31	0.3%	300	7.45

COMMENTS:

*INDICATOR PARAMETERS HAVE STABILIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN: ± 0.1 for pH; ± 3% for Specific Conductivity and Temperature;
 ± 10 mv for Redox Potential; and ± 10% for Dissolved Oxygen and Turbidity

LOW FLOW SAMPLING DATA SHEET

SHEET ____ OF ____

SITE: <u>Port Reading</u> DATE: <u>10/6/2020</u> WEATHER: <u>Sunny 65°F</u>	CONSULTING FIRM: <u>EARTH SYSTEMS</u> FIELD PERSONNEL: <u>KJ</u> CERTIFICATION #: <u>13040</u>
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MONITOR WELL #: <u>LN-5</u>	WELL DEPTH: <u>17'</u>	SCREENED/OPEN INTERVAL: <u>7-17</u>
WELL PERMIT #: <u>E201013003</u>	WELL DIAMETER: <u>4</u> Inches	

PID/FID READINGS (ppm): BACKGROUND: <u>0.0</u> BENEATH OUTER CAP: <u>0.0</u> BENEATH INNER CAP: <u>0.0</u>	PUMP INTAKE DEPTH: <u>9.5</u> ft below TOC DEPTH TO WATER BEFORE PUMP INSTALLATION: <u>6.40</u> ft below TOC
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TIME	PURGING	SAMPLING	pH (pH units) (SM 4500H+B)		SPECIFIC CONDUCTIVITY (mS/cm) (EPA 120.1)		REDOX POTENTIAL (mv)		DISSOLVED OXYGEN (mg/l) (SM 4500OG)		TURBIDITY (NTU) (EPA 180.1)		TEMPERATURE (degrees C) (SM 2550)		PUMPING RATE (ml/min)	DEPTH TO WATER (ft below TOC)
			READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*		
940	X		5.36	NA	0.245	NA	293	NA	2.94	NA	28.4	NA	20.84	NA	300	7.20
945	X		5.26	0.10	0.245	-	291	2	2.87	2%	32.1	13%	21.02	1%		7.23
950	X		5.19	0.07	0.244	1%	289	2	2.84	1%	36.9	15%	21.43	2%		7.25
955	X		5.14	0.05	0.243	1%	288	1	2.86	1%	35.4	4%	21.73	1%		7.27
1000	X		5.13	0.01	0.243	-	288	0	2.85	1%	34.1	4%	21.84	1%		7.28
1005	X		5.12	0.01	0.243	-	288	0	2.92	2%	31.4	8%	22.12	1%		
1010		X	5.10	0.02	0.243	-	288	0	2.88	2%	30.2	4%	22.28	1%		

COMMENTS:

*INDICATOR PARAMETERS HAVE STABILIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN: ± 0.1 for pH; ± 3% for Specific Conductivity and Temperature;
 ± 10 mv for Redox Potential; and ± 10% for Dissolved Oxygen and Turbidity

SITE: Former Hess - Port Reading CONSULTING FIRM: EARTH SYSTEMS
 DATE: 10/6/20 FIELD PERSONNEL: AE
 WEATHER: 65° Sunny CERTIFICATION #: 13040

MONITOR WELL #: LN - 6 WELL DEPTH: 15.13' SCREENED/OPEN INTERVAL: 5-15'
 WELL PERMIT #: E201013004 WELL DIAMETER: 4" inches 3-18

PID/FID READINGS (ppm): BACKGROUND: 0.0 PUMP INTAKE DEPTH: 10.5 ft below TOC
 BENEATH OUTER CAP: 0.0 DEPTH TO WATER BEFORE PUMP INSTALLATION: 8.63 ft below TOC
 BENEATH INNER CAP: 0.0

TIME	PURGING	SAMPLING	pH (pH units) (SM 4500H+D)		SPECIFIC CONDUCTIVITY (mS/cm) (EPA 120.1)		REDOX POTENTIAL (mv)		DISSOLVED OXYGEN (mg/l) (SM 4500OG)		TURBIDITY (NTU) (EPA 130.1)		TEMPERATURE (degrees C) (SM 2550)		PUMPING RATE (ml/min)	DEPTH TO WATER (ft below TOC)
			READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*		
1505	X		6.57	NA	0.421	NA	+02	NA	2.80	NA	17.9	NA	23.00	NA	719	8.67
1510	X		6.63	0.06	0.499	4.3%	-110	-8	1.06	37%	16.2	9.4%	22.95	0.2		8.71
1515	X		6.67	0.04	0.571	14%	-118	-8	1.22	30%	13.1	19%	22.95	0%		
1520	X		6.71	0.04	0.626	9.6%	-122	-4	1.09	10%	12.0	8.3%	22.77	1%		
1525	X		6.74	0.03	0.622	10.5%	-126	-4	0.99	9.1%	10.2	15%	23.02	0.2%		
1530	X		6.74	0.00	0.711	2.7%	-128	-2	0.95	4%	9.5	6.4%	23.10	0.3%		
1535	X		6.74	0.00	0.721	1.4%	-131	-3	0.91	5%	8.8	7.3%	23.20	0.8%		
1540	X		6.74	0.00	0.735	1.9%	-134	-3	0.85	5.5%	8.2	6.8%	23.29	1%		
1545	X		6.74	0.00	0.754	2.6%	-138	-4	0.78	8.2%	7.4	9.7%	23.33	1%		

COMMENTS:

*INDICATOR PARAMETERS HAVE STABILIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN: ± 0.1 for pH; $\pm 3\%$ for Specific Conductivity and Temperature;
 ± 10 mv for Redox Potential; and $\pm 10\%$ for Dissolved Oxygen and Turbidity

LOW FLOW SAMPLING DATA SHEET

SHEET 1 OF 1

SITE: Former Hess - Port Reading
 DATE: 10/6/20
 WEATHER: 68° Sunny
 CONSULTING FIRM: EARTH SYSTEMS
 FIELD PERSONNEL: AE
 CERTIFICATION #: 13040

MONITOR WELL #: LN - 7 WELL DEPTH: 15.18'
 WELL PERMIT #: E201013004 WELL DIAMETER: 4" Inches
 SCREENED/OPEN INTERVAL: 5.18'
8-18'

PID/FID READINGS (ppm): BACKGROUND: 0.0
 BENEATH OUTER CAP: 0.0
 BENEATH INNER CAP: 0.4
 PUMP INTAKE DEPTH: 19 ft below TOC
 DEPTH TO WATER BEFORE PUMP INSTALLATION: 9.18 ft below TOC

TIME	PURGING	SAMPLING	pH (pH units) (SM 4500+8)		SPECIFIC CONDUCTIVITY (mS/cm) (EPA 120.1)		REDOX POTENTIAL (mv)		DISSOLVED OXYGEN (mg/l) (SM 4500 OG)		TURBIDITY (NTU) (EPA 180.1)		TEMPERATURE (degrees C) (SM 2550)		PUMPING RATE (ml/min)	DEPTH TO WATER (ft below TOC)
			READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*		
11:25	X		6.64	NA	0.820	NA	-107	NA	3.44	NA	16.5	NA	24.07	NA	315	9.21
11:30	X		6.74	6.16	0.924	12%	-126	-19	2.04	40%	8.3	20%	23.95	0.4%		
11:35	X		6.84	0.10	0.991	7.2%	-146	-19	1.87	83%	6.3	24%	23.88	0.2%		
11:40	X		6.91	6.07	1.16	10%	-154	-14	0.42	77%	4.1	31%	24.03	0.6%		
11:45	X		6.94	0.03	1.12	1.8%	-158	-4	0.41	2.3%	2.8	31%	24.06	0.1%		
11:50	X		6.95	0.01	1.13	0.8%	-161	-3	0.40	2.4%	2.5	10.7%	24.07	0.1%		
11:55	X		6.96	0.01	1.14	6.8%	-164	-3	0.38	5%	2.3	8%	24.08	0.1%		
12:00	X		6.97	0.01	1.15	0.8%	-166	-2	0.27	2.6%	2.3	0%	24.01	0.2%		
12:05	X		6.99	0.02	1.17	1.7%	-169	-3	0.37	0%	2.2	89%	24.03	0.1%		
12:10	X		7.00	0.01	1.17	0%	-171	-2	0.36	2%	2.2	0%	24.07	0.3%		

COMMENTS:

*INDICATOR PARAMETERS HAVE STABILIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN: ± 0.1 for pH; $\pm 3\%$ for Specific Conductivity and Temperature;
 ± 10 mv for Redox Potential; and $\pm 10\%$ for Dissolved Oxygen and Turbidity

Date: 6/8/20 Job #/Name: PR-SOUTH Weather: 80W 60°F Personnel: KS
 Equipment: HORIBA US 2 Serial Number: 43606

pH							
Time	Temperature	Zero Pt (pH 4)	Lot / Exp Date	Span Pt (pH 10)	Lot / Exp Date	Initial Check (must be within +/- 0.1 units or need to recalibrate) (pH 7 - acceptable range 6.9-7.1)	Lot / Exp Date
		Initial Reading	Adjusted	Initial Reading	Adjusted		Recalibrate (Y/N)*
8:15	13.22	4.01	4.00	9.81	10.00	7.03	N
pH 3 Hour Check (*2-point calibration only needs to be conducted if check value is out of range)							
Time (3 hr check)	Temperature	Zero Pt * (pH 4)	Lot / Exp Date	Span Pt * (pH 10)	Lot / Exp Date	Check (must be within +/- 0.2 units or need to recalibrate) (pH 7 - acceptable range 6.8-7.2)	Lot / Exp Date
11:15	21.4	4.04	4.00	10.05	10.00	7.01	N

Conductivity						
Time	Zero (Ambient Air)	Lot / Exp Date	Span (1.413 ms/cm)	Lot / Exp Date	Check (must be within +/- 1% or need to recalibrate) (use 1.413 ms/cm - acceptable range 1.398 - 1.427)	Lot / Exp Date
	Initial Reading	Adjusted	Initial Reading	Adjusted	Check Value	Recalibrate (Y/N)
8:20	0.001	0.000	1.21	1.41	1.41	N

Turbidity						
Time	Zero	Lot / Exp Date	Span (100 NTU)	Lot / Exp Date	Check - must be within +/- 10% or need to recalibrate (use 100 NTU - acceptable range 90-110 NTU)	Lot / Exp Date
	Initial Reading	Adjusted	Initial Reading	Adjusted	Check Value	Recalibrate (Y/N)
8:25	0.0	0.0	97.5	100	100	N

Dissolved Oxygen					
Time	Zero (0% Solution)	Lot / Exp Date	Air Span (100%)	Lot / Exp Date	Check - reading must be 0.3mg/L or less (0% Solution)
	Initial Reading	Adjusted	Check Value	Recalibrate (Y/N)	Check Value
8:30	0.0	0.0	104.81	N	0.0



NJDEP Certification No. 13040

Equipment: 4-52 Date: 6/8/21 Job #/Name: Perlicensing Sinks Weather: 61° Sunny Personnel: AE
 Serial Number: 47030

pH							
Time	Temperature	Zero Pt (pH 4)	Lot / Exp Date	Span Pt (pH 10)	Lot / Exp Date	Initial Check (must be within +/- 0.1 units or need to recalibrate) (pH 7 - acceptable range 6.9-7.1)	Lot / Exp Date
		Initial Reading	Adjusted	Initial Reading	Adjusted		Recalibrate (Y/N)*
8:00	17.5	5.02	5/6/21	10.05	6/9/21	7.00	10/31/21
							N

pH 3 Hour Check (*2-point calibration only needs to be conducted if check value is out of range)

Time (3 hr check)	Temperature	Zero Pt * (pH 4)	Lot / Exp Date	Span Pt * (pH 10)	Lot / Exp Date	Check (must be within +/- 0.2 units or need to recalibrate) (pH 7 - acceptable range 6.8-7.2)	Lot / Exp Date
11:15	21.90	4.01	5/6/21	10.11	6/9/21	7.00	N

Conductivity						
Time	Zero (Ambient Air)	Lot / Exp Date	Span (1.413 ms/cm)	Lot / Exp Date	Check (must be within +/- 1% or need to recalibrate) (use 1.413 ms/cm - acceptable range 1.398 - 1.427)	Lot / Exp Date
	Initial Reading	Adjusted	Initial Reading	Adjusted	Check Value	Recalibrate (Y/N)
8:00	0.609	0.000	1.45	3/31/21	1.41	N

Turbidity						
Time	Zero	Lot / Exp Date	Span (100 NTU)	Lot / Exp Date	Check - must be within +/- 10% or need to recalibrate (use 100 NTU - acceptable range 90-110 NTU)	Lot / Exp Date
	Initial Reading	Adjusted	Initial Reading	Adjusted	Check Value	Recalibrate (Y/N)
8:00	1.7	0.0	102	7/22/21	103	N

Dissolved Oxygen					
Time	Zero (0% Solution)	Lot / Exp Date	Air Span (100%)	Lot / Exp Date	Check - reading must be 0.3mg/L or less (0% Solution)
	Initial Reading	Adjusted	Check Value	Recalibrate (Y/N)	Check Value
8:12	0	0	100	N	0.2

LOW FLOW SAMPLING DATA SHEET

SHEET ____ OF ____

SITE: <u>Port Reading</u> DATE: <u>10/8/2020</u> WEATHER: <u>Sunny 60</u>	CONSULTING FIRM: <u>EARTH SYSTEMS</u> FIELD PERSONNEL: <u>KJ</u> CERTIFICATION #: <u>13040</u>
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MONITOR WELL #: <u>LS-1R</u> WELL PERMIT #: <u>2600025324</u>	WELL DEPTH: <u>16'</u> WELL DIAMETER: <u>4</u> inches	SCREENED/OPEN INTERVAL: <u>6-16</u>
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PID/FID READINGS (ppm): BACKGROUND: <u>0.0</u> BENEATH OUTER CAP: <u>0.0</u> BENEATH INNER CAP: <u>0.0</u>	PUMP INTAKE DEPTH: <u>8.5</u> ft below TOC DEPTH TO WATER BEFORE PUMP INSTALLATION: <u>3.60</u> ft below TOC
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TIME	PURGING	SAMPLING	pH (pH units) (SM 4500H+B)		SPECIFIC CONDUCTIVITY (mS/cm) (EPA 120.1)		REDOX POTENTIAL (mv)		DISSOLVED OXYGEN (mg/l) (SM 4500OG)		TURBIDITY (NTU) (EPA 180.1)		TEMPERATURE (degrees C) (SM 2550)		PUMPING RATE (ml/min)	DEPTH TO WATER (ft below TOC)
			READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*		
1020	Y		7.25	NA	0.498	NA	-23	NA	0.20	NA	229	NA	20.01	NA	300	4.00
1025	Y		6.99	0.26	0.483	30%	-49	26	0.14	300%	223	34%	20.70	40%		4.25
1030	X		6.97	0.03	0.481	10%	-53	4	0.14	-	169	240%	20.97	10%		4.26
1035	Y		6.98	0.01	0.480	10%	-56	3	0.14	-	111	340%	21.05	10%		4.27
1040	Y		6.98	-	0.478	10%	-59	3	0.14	-	101	90%	21.15	10%		4.27
1045	Y		6.98	-	0.477	10%	-64	5	0.14	-	98.4	30%	21.27	10%		
1050	X		6.98	-	0.476	10%	-68	4	0.14	-	95.7	30%	21.41	10%		
1055		Y	6.99	0.01	0.475	10%	-72	4	0.14	-	92.7	30%	21.36	10%		

COMMENTS:

*INDICATOR PARAMETERS HAVE STABILIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN: ± 0.1 for pH; ± 3% for Specific Conductivity and Temperature; ± 10 mv for Redox Potential; and ± 10% for Dissolved Oxygen and Turbidity

LOW FLOW SAMPLING DATA SHEET

SHEET ____ OF ____

SITE:	<u>Port Reading</u>	CONSULTING FIRM:	<u>EARTH SYSTEMS</u>
DATE:	<u>10/8/2020</u>	FIELD PERSONNEL:	<u>AE</u>
WEATHER:	<u>68° Sunny</u>	CERTIFICATION #:	<u>13040</u>

MONITOR WELL #:	<u>LS-2</u>	WELL DEPTH:	<u>12.25</u>
WELL PERMIT #:	<u>2600607593</u>	WELL DIAMETER:	<u>4</u> Inches
		SCREENED/OPEN INTERVAL:	<u>7.25 - 12.25'</u>

PID/FID READINGS (ppm):	BACKGROUND:	<u>0.0</u>	PUMP INTAKE DEPTH: <u>9.5</u> ft below TOC
	BENEATH OUTER CAP:	<u>0.0</u>	DEPTH TO WATER BEFORE PUMP INSTALLATION: <u>3.24</u> ft below TOC
	BENEATH INNER CAP:	<u>25.2</u>	

TIME	PURGING	SAMPLING	pH (pH units) (SM 4500H+B)		SPECIFIC CONDUCTIVITY (mS/cm) (EPA 120.1)		REDOX POTENTIAL (mv)		DISSOLVED OXYGEN (mg/l) (SM 4500OG)		TURBIDITY (NTU) (EPA 180.1)		TEMPERATURE (degrees C) (SM 2550)		PUMPING RATE (ml/min)	DEPTH TO WATER (ft below TOC)
			READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*		
1030	X		7.33	NA	1.36	NA	164	NA	3.40	NA	73.5	NA	18.96	NA	300	3.32
1035	X		7.49	0.16	1.34	1%	125	39	1.11	67%	83.3	130%	19.56	3%		3.34
1040	X		7.49	-	1.34	-	80	45	0.87	210%	74.0	110%	19.93	2%		3.38
1045	X		7.50	0.01	1.34	-	15	65	0.65	250%	50.4	310%	20.06	1%		3.40
1050	X		7.52	0.02	1.35	1%	-6	21	0.55	154%	31.2	384%	20.23	1%		3.43
1055	X		7.49	0.01	1.35	-	-14	8	0.56	10%	33.6	8%	20.49	1%		3.44
1100	X		7.48	0.01	1.37	1%	-20	6	0.57	10%	31.8	6%	20.61	1%		3.46
1105	X		7.47	0.01	1.41	30%	-25	5	0.58	10%	28.5	90%	21.02	20%		
1110		X	7.47	-	1.44	20%	-34	9	0.54	60%	26.4	70%	21.10	10%		

COMMENTS:

*INDICATOR PARAMETERS HAVE STABILIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN: ± 0.1 for pH; ± 3% for Specific Conductivity and Temperature;
± 10 mv for Redox Potential; and ± 10% for Dissolved Oxygen and Turbidity

LOW FLOW SAMPLING DATA SHEET

SHEET ____ OF ____

SITE: <u>Port Reading</u> DATE: <u>10/8/2020</u> WEATHER: <u>68°F Sunny</u>	CONSULTING FIRM: <u>EARTH SYSTEMS</u> FIELD PERSONNEL: <u>AE</u> CERTIFICATION #: <u>13040</u>
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MONITOR WELL #: <u>LS-3</u> WELL PERMIT #: <u>2600007592</u>	WELL DEPTH: <u>12.5</u> WELL DIAMETER: <u>4</u> inches	SCREENED/OPEN INTERVAL: <u>6.5-12.5'</u>
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PID/FID READINGS (ppm): BACKGROUND: <u>0.0</u> BENEATH OUTER CAP: <u>0.6</u> BENEATH INNER CAP: <u>1.2</u>	PUMP INTAKE DEPTH: <u>8.5</u> ft below TOC DEPTH TO WATER BEFORE PUMP INSTALLATION: <u>1.29</u> ft below TOC
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TIME	PURGING	SAMPLING	pH (pH units) (SM 4500H+B)		SPECIFIC CONDUCTIVITY (mS/cm) (EPA 120.1)		REDOX POTENTIAL (mv)		DISSOLVED OXYGEN (mg/l) (SM 4500OG)		TURBIDITY (NTU) (EPA 180.1)		TEMPERATURE (degrees C) (SM 2550)		PUMPING RATE (ml/min)	DEPTH TO WATER (ft below TOC)
			READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*		
1150	X		6.57	NA	7.66	NA	-77	NA	2.15	NA	35.8	NA	20.40	NA	315	1.32
1155	X		6.55	0.02	7.73	1%	-82	5	1.47	31%	34.5	4%	20.39	1%		1.34
1200	X		6.55	-	7.81	1%	-86	4	1.05	28%	28.4	17%	20.34	1%		1.36
1205	X		6.56	0.01	7.74	1%	-88	2	0.96	8%	32.1	13%	20.78	2%		1.38
1210	X		6.56	-	7.74	-	-90	2	0.99	3%	35.5	4%	20.77	1%		1.40
1215	X		6.56	-	7.75	1%	-91	1	1.03	4%	36.9	4%	20.75	1%		
1220	X		6.56	-	7.75	-	-91	0	1.10	2%	37.1	1%	20.72	1%		
1225		X	6.56	-	7.77	1%	-93	2	1.13	3%	35.6	4%	20.74	1%		

COMMENTS:

*INDICATOR PARAMETERS HAVE STABILIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN: ± 0.1 for pH; ± 3% for Specific Conductivity and Temperature;
 ± 10 mv for Redox Potential; and ± 10% for Dissolved Oxygen and Turbidity

LOW FLOW SAMPLING DATA SHEET

SHEET ____ OF ____

SITE: <u>Port Reading</u> DATE: <u>10/8/2020</u> WEATHER: <u>Sunny 60°F</u>	CONSULTING FIRM: <u>EARTH SYSTEMS</u> FIELD PERSONNEL: <u>KJ</u> CERTIFICATION #: <u>13040</u>
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MONITOR WELL #: <u>LS-4</u>	WELL DEPTH: <u>14'</u>	SCREENED/OPEN INTERVAL: <u>7-14'</u>
WELL PERMIT #: <u>2600007595</u>	WELL DIAMETER: <u>4</u> Inches	

PID/FID READINGS (ppm): BACKGROUND: <u>0.0</u> BENEATH OUTER CAP: <u>0.0</u> BENEATH INNER CAP: <u>0.0</u>	PUMP INTAKE DEPTH: <u>9.5</u> ft below TOC DEPTH TO WATER BEFORE PUMP INSTALLATION: <u>1.90</u> ft below TOC
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TIME	PURGING	SAMPLING	pH (pH units) (SM 4500H+B)		SPECIFIC CONDUCTIVITY (mS/cm) (EPA 120.1)		REDOX POTENTIAL (mv)		DISSOLVED OXYGEN (mg/l) (SM 4500OG)		TURBIDITY (NTU) (EPA 180.1)		TEMPERATURE (degrees C) (SM 2550)		PUMPING RATE (ml/min)	DEPTH TO WATER (ft below TOC)
			READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*		
1145	Y		7.41	NA	2.29	NA	18	NA	0.40	NA	99.1	NA	19.99	NA	300	2.70
1150	Y		7.37	0.04	2.32	10%	5	13	0.40	-	100	10%	19.95	10%		2.40
1155	Y		7.34	0.03	2.33	14%	6	1	0.40	-	101	10%	20.20	10%		2.44
1200	Y		7.33	0.01	2.32	10%	11	5	0.40	-	95.1	60%	20.77	34%		2.46
1205	Y		7.33	-	2.31	10%	19	8	0.40	-	94.7	10%	20.60	10%		2.50
1210	Y		7.34	0.01	2.29	10%	15	4	0.40	-	94.6	10%	20.55	10%		2.53
1215		X	7.35	0.01	2.29	10%	19	4	0.40	-	94.8	10%	20.86	10%		2.55

COMMENTS:

*INDICATOR PARAMETERS HAVE STABILIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN: ± 0.1 for pH; ± 3% for Specific Conductivity and Temperature; ± 10 mv for Redox Potential; and ± 10% for Dissolved Oxygen and Turbidity

7/16/20 105-14

Date: 7/15/20 Job #/Name: R-12-19-VG1

Weather: 80° S-m

Personnel: AE

Equipment: C-52

Serial Number: 24747

pH							
Time	Temperature	Zero Pt (pH 4)	Lot / Exp Date	Span Pt (pH 10)	Lot / Exp Date	Initial Check (must be within +/- 0.1 units or need to recalibrate)	Lot / Exp Date
		Initial Reading	Adjusted	Initial Reading	Adjusted	(pH 7 - acceptable range 6.9-7.1)	Recalibrate (Y/N)*
7/6 1:57	80°	4.87	5/4/21	4.66	4.93/4.74	10.00/10.00	7.00/7.04
7/6 7:30	70°	4.63	5/4/21	4.66	4.93/4.74	10.00/10.00	7.00/7.04
pH 3 Hour Check (*2-point calibration only needs to be conducted if check value is out of range)							
Time (3 hr check)	Temperature	Zero Pt * (pH 4)	Lot / Exp Date	Span Pt * (pH 10)	Lot / Exp Date	Check (must be within +/-0.2 units or need to recalibrate)	Lot / Exp Date
						(pH 7 - acceptable range 6.8-7.2)	
7/6 10:05	80°	4.04	4.00	10.08	10.00	7.25	N
7/6 11:00	80°	4.01	4.00	10.04	10.00	7.00	N

Conductivity						
Time	Zero (Ambient Air)	Lot / Exp Date	Span (1.413 ms/cm)	Lot / Exp Date	Check (must be within +/-1% or need to recalibrate)	Lot / Exp Date
					(use 1.413 ms/cm - acceptable range 1.398 - 1.427)	
	Initial Reading	Adjusted	Initial Reading	Adjusted	Check Value	Recalibrate (Y/N)
7/6 8:02	0.000	0.000	0.991	1.41	1.41	N
7/6 10:35	0.000	0.000	0.920	1.41	1.41	N

Turbidity						
Time	Zero	Lot / Exp Date	Span (100 NTU)	Lot / Exp Date	Check - must be within +/- 10% or need to recalibrate	Lot / Exp Date
					(use 100 NTU - acceptable range 90 110 NTU)	
	Initial Reading	Adjusted	Initial Reading	Adjusted	Check Value	Recalibrate (Y/N)
7/6 8:08	0.1	0.0	94.1	100	103	N
7/6 10:58	0.2	0.0	94.3	100	101	N

Dissolved Oxygen					
Time	Zero (0% Solution)	Lot / Exp Date	Air Span (100%)	Lot / Exp Date	Check - reading must be 0.3mg/L or less
					(0% Solution)
	Initial Reading	Adjusted	Check Value	Recalibrate (Y/N)	Check Value
7/6 8:10	0.0	0.0	100	N	0.7
7/6 10:05	0.0	0.0	100	N	0.1



NJDEP Certification No. 13040

Date: 7/15/20 Job #/Name: PR NO 1 Weather: SUN 88°F Personnel: KJS

Equipment: HORIBA US2

Serial Number: 44015

pH							
Time	Temperature	Zero Pt (pH 4)	Lot / Exp Date	Span Pt (pH 10)	Lot / Exp Date	Initial Check (must be within +/- 0.1 units or need to recalibrate) (pH 7 - acceptable range 6.9-7.1)	Lot / Exp Date
		Initial Reading	Adjusted	Initial Reading	Adjusted		Recalibrate (Y/N)*
805	24.51	4.24	5/6/21	9.99	6/9/21	7.02	12/31/21
pH 3 Hour Check (*2-point calibration only needs to be conducted if check value is out of range)							
Time (3 hr check)	Temperature	Zero Pt * (pH 4)	Lot / Exp Date	Span Pt * (pH 10)	Lot / Exp Date	Check (must be within +/-0.2 units or need to recalibrate) (pH 7 - acceptable range 6.8-7.2)	Lot / Exp Date
		Initial Reading	Adjusted	Initial Reading	Adjusted		Recalibrate (Y/N)*
10:45	22.50	4.04	4.00	10.00	10.00	7.01	N

Conductivity						
Time	Zero (Ambient Air)	Lot / Exp Date	Span (1.413 ms/cm)	Lot / Exp Date	Check (must be within +/-1% or need to recalibrate) (use 1.413 ms/cm - acceptable range 1.398 - 1.427)	Lot / Exp Date
	Initial Reading	Adjusted	Initial Reading	Adjusted	Check Value	Recalibrate (Y/N)
810	0.001	0.000	1.29	1.41	1.40	N

Turbidity						
Time	Zero	Lot / Exp Date	Span (100 NTU)	Lot / Exp Date	Check - must be within +/- 10% or need to recalibrate (use 100 NTU - acceptable range 90-110 NTU)	Lot / Exp Date
	Initial Reading	Adjusted	Initial Reading	Adjusted	Check Value	Recalibrate (Y/N)
815	0.0	0.0	10.5	100	100	N

Dissolved Oxygen					
Time	Zero (0% Solution)	Lot / Exp Date	Air Span (100%)	Lot / Exp Date	Check - reading must be 0.3mg/L or less (0% Solution)
	Initial Reading	Adjusted	Check Value	Recalibrate (Y/N)	Check Value
820	0.0	8/28/20	78.5%	N	0.0

Earth Systems

NJDEP Certification No. 13040

Equipment: C-50 Date: 10/20 Job #/Name: Port-Norfolk - V6.1 Weather: 69° Sunny Personnel: AE
Serial Number: 47036

		pH					
Time	Temperature	Zero Pt (pH 4)	Lot / Exp Date	Span Pt (pH 10)	Lot / Exp Date	Initial Check (must be within +/- 0.1 units or need to recalibrate)	Lot / Exp Date
		Initial Reading	Adjusted	Initial Reading	Adjusted	(pH 7 - acceptable range 6.9-7.1)	Recalibrate (Y/N)*
6:00		4.07	5/6/21	9.70	10.00	7.09	N

pH 3 Hour Check (*2-point calibration only needs to be conducted if check value is out of range)

Time (3 hr check)	Temperature	Zero Pt * (pH 4)	Lot / Exp Date	Span Pt * (pH 10)	Lot / Exp Date	Check (must be within +/- 0.2 units or need to recalibrate)	Lot / Exp Date
11:21		4.09	5/6/21	10.08	10.00	7.00	N

		Conductivity				
Time	Zero (Ambient Air)	Lot / Exp Date	Span (1.413 ms/cm)	Lot / Exp Date	Check (must be within +/- 1% or need to recalibrate)	Lot / Exp Date
	Initial Reading	Adjusted	Initial Reading	Adjusted	(use 1.413 ms/cm - acceptable range 1.398 - 1.427)	Recalibrate (Y/N)
8:05	0.004	0.000	1.51	1.51	1.41	N

		Turbidity				
Time	Zero	Lot / Exp Date	Span (100 NTU)	Lot / Exp Date	Check - must be within +/- 10% or need to recalibrate	Lot / Exp Date
	Initial Reading	Adjusted	Initial Reading	Adjusted	(use 100 NTU - acceptable range 90-110 NTU)	Recalibrate (Y/N)
8:08	0.0	0.0	99.9	100	100	N

		Dissolved Oxygen			
Time	Zero (0% Solution)	Lot / Exp Date	Air Span (100%)	Lot / Exp Date	Check - reading must be 0.3mg/L or less
	Initial Reading	Adjusted	Check Value	Recalibrate (Y/N)	(0% Solution)
8:10	0	0	10.1	N	0.1

Earth Systems

NJDEP Certification No. 13040

Date: 10/7/20 Job #/Name: PR #1/LF Weather: Sunny 70 Personnel: KJ
 Equipment: HORIBA US2 Serial Number: 43606

pH							
Time	Temperature	Zero Pt (pH 4)	Lot / Exp Date	Span Pt (pH 10)	Lot / Exp Date	Initial Check (must be within +/- 0.1 units or need to recalibrate) (pH 7 - acceptable range 6.9-7.1)	Lot / Exp Date
		Initial Reading	Adjusted	Initial Reading	Adjusted		Recalibrate (Y/N)*
8:10	16.97	3.98	5/6/21	10.24	6/9/21	7.02	10/31/21
pH 3 Hour Check (*2-point calibration only needs to be conducted if check value is out of range)							
Time (3 hr check)	Temperature	Zero Pt * (pH 4)	Lot / Exp Date	Span Pt * (pH 10)	Lot / Exp Date	Check (must be within +/- 0.2 units or need to recalibrate) (pH 7 - acceptable range 6.8-7.2)	Lot / Exp Date
11:30	22.08	4.06	4.00	10.08	10.00	7.01	N

Conductivity						
Time	Zero (Ambient Air)	Lot / Exp Date	Span (1.413 ms/cm)	Lot / Exp Date	Check (must be within +/- 1% or need to recalibrate) (use 1.413 ms/cm - acceptable range 1.398 - 1.427)	Lot / Exp Date
	Initial Reading	Adjusted	Initial Reading	Adjusted	Check Value	Recalibrate (Y/N)
8:15	0.000	0.000	1.15	1.41	1.42	N

Turbidity						
Time	Zero	Lot / Exp Date	Span (100 NTU)	Lot / Exp Date	Check - must be within +/- 10% or need to recalibrate (use 100 NTU - acceptable range 90-110 NTU)	Lot / Exp Date
	Initial Reading	Adjusted	Initial Reading	Adjusted	Check Value	Recalibrate (Y/N)
8:20	0.0	0.0	98.2	100	100	N

Dissolved Oxygen					
Time	Zero (0% Solution)	Lot / Exp Date	Air Span (100%)	Lot / Exp Date	Check - reading must be 0.3mg/L or less (0% Solution)
	Initial Reading	Adjusted	Check Value	Recalibrate (Y/N)	Check Value
8:25	0.0	0.0	101.9	N	0.0

SHEET 7 OF 1

CONSULTING FIRM: EARTH SYSTEMS

FIELD PERSONNEL: KT

CERTIFICATION #: 13040

WELL DEPTH: 15 14.25

WELL DIAMETER: 4" inches

SCREENED/OPEN INTERVAL: 5-15

4-14.25

5.0

00

0.0

PUMP INTAKE DEPTH: 6.5 ft below TOC

DEPTH TO WATER BEFORE PUMP INSTALLATION: 5.5' ft below TOC

COMMENTS:

*INDICATOR PARAMETERS HAVE STABILIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN: ± 0.1 for pH; $\pm 3\%$ for Specific Conductivity and Temperature; ± 10 mv for Redox Potential; and $\pm 10\%$ for Dissolved Oxygen and Turbidity

LOW FLOW SAMPLING DATA SHEET

SHEET ____ OF ____

SITE: <u>Port Reading</u> DATE: <u>10/7/2020</u> WEATHER: <u>Sunny 70°F</u>	CONSULTING FIRM: <u>EARTH SYSTEMS</u> FIELD PERSONNEL: <u>KJ</u> CERTIFICATION #: <u>13040</u>
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MONITOR WELL #: <u>L1-2</u>	WELL DEPTH: <u>14.75</u>	SCREENED/OPEN INTERVAL: <u>4.75 - 14.75</u>
WELL PERMIT #: <u>26000 80656</u>	WELL DIAMETER: <u>4</u> inches	

PID/FID READINGS (ppm): BACKGROUND: <u>0.0</u> BENEATH OUTER CAP: <u>0.0</u> BENEATH INNER CAP: <u>0.0</u>	PUMP INTAKE DEPTH: <u>8.0</u> ft below TOC DEPTH TO WATER BEFORE PUMP INSTALLATION: <u>6.37</u> ft below TOC
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TIME	PURGING	SAMPLING	pH (pH units) (SM 4500H+B)		SPECIFIC CONDUCTIVITY (mS/cm) (EPA 120.1)		REDOX POTENTIAL (mv)		DISSOLVED OXYGEN (mg/l) (SM 4500OG)		TURBIDITY (NTU) (EPA 180.1)		TEMPERATURE (degrees C) (SM 2550)		PUMPING RATE (ml/min)	DEPTH TO WATER (ft below TOC)
			READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*		
1040	X		6.57	NA	0.980	NA	-46	NA	0.30	NA	235	NA	21.93	NA	300	6.40
1045	X		6.63	0.06	0.970	10%	-52	6	0.30	-	228	3%	22.15	10%		
1050	X		6.65	0.02	0.958	10%	-60	8	0.30	-	205	10%	22.30	10%		
1055	X		6.68	0.03	0.933	30%	-65	5	0.30	-	198	30%	22.29	10%		
1100	X		6.69	0.01	0.928	10%	-69	4	0.30	-	184	70%	22.32	10%		
1105	X		6.71	0.02	0.918	10%	-72	3	0.30	-	177	40%	22.35	10%		
1110		X	6.72	0.01	0.910	10%	-75	3	0.30	-	171	30%	22.36	10%		

COMMENTS:

*INDICATOR PARAMETERS HAVE STABILIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN: ± 0.1 for pH; ± 3% for Specific Conductivity and Temperature; ± 10 mv for Redox Potential; and ± 10% for Dissolved Oxygen and Turbidity

LOW FLOW SAMPLING DATA SHEET

SHEET ____ OF ____

SITE:	<u>Port Reading</u>	CONSULTING FIRM:	<u>EARTH SYSTEMS</u>
DATE:	<u>10/7/2020</u>	FIELD PERSONNEL:	<u>AE</u>
WEATHER:	<u>68°F Sunny</u>	CERTIFICATION #:	<u>13040</u>

MONITOR WELL #:	<u>L1-3</u>	WELL DEPTH:	<u>11.4'</u>
WELL PERMIT #:	<u>2600080664</u>	WELL DIAMETER:	<u>4</u> Inches
		SCREENED/OPEN INTERVAL:	<u>6.4 - 11.4'</u>

PID/FID READINGS (ppm):	BACKGROUND:	<u>0.0</u>	PUMP INTAKE DEPTH: <u>8.4</u> ft below TOC
	BENEATH OUTER CAP:	<u>0.0</u>	DEPTH TO WATER BEFORE PUMP INSTALLATION: <u>6.92</u> ft below TOC
	BENEATH INNER CAP:	<u>0.0</u>	

TIME	PURGING	SAMPLING	pH (pH units) (SM 4500H+B)		SPECIFIC CONDUCTIVITY (mS/cm) (EPA 120.1)		REDOX POTENTIAL (mv)		DISSOLVED OXYGEN (mg/l) (SM 4500OG)		TURBIDITY (NTU) (EPA 180.1)		TEMPERATURE (degrees C) (SM 2550)		PUMPING RATE (ml/min)	DEPTH TO WATER (ft below TOC)
			READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*		
855	X		6.48	NA	0.529	NA	-8	NA	2.58	NA	84.9	NA	18.99	NA	330	6.99
900	X		6.64	0.16	0.593	12%	-55	47	2.33	21%	78.9	7%	19.29	2%		7.10
905	X		6.80	0.16	0.694	17%	-99	44	1.54	35%	57.1	27%	19.71	2%		7.14
910	X		6.88	0.08	0.755	8.7%	-115	16	1.38	10%	37.3	34%	19.90	1%		
915	X		6.91	0.03	0.802	6.8%	-125	10	1.26	9%	28.1	24%	20.11	1%		
920	X		6.94	0.03	0.833	3.2%	-132	7	1.22	3%	24.0	14%	20.26	1%		
925	X		7.00	0.06	0.870	4.4%	-141	9	1.20	2%	17.9	25%	20.40	1%		
930	X		7.02	0.02	0.887	1.9%	-145	4	1.18	2%	16.4	8%	20.50	1%		
935	X		7.04	0.02	0.911	2%	-151	7	1.16	2%	15.7	4%	20.57	1%		
940	X		7.09	0.05	0.920	1%	-156	5	1.14	2%	14.4	8%	20.60	1%		
945	X		7.12	0.03	0.933	1%	-163	7	1.12	2%	13.0	9%	20.62	1%		

COMMENTS:

*INDICATOR PARAMETERS HAVE STABILIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN: ± 0.1 for pH; ± 3% for Specific Conductivity and Temperature;
± 10 mv for Redox Potential; and ± 10% for Dissolved Oxygen and Turbidity

LOW FLOW SAMPLING DATA SHEET

SHEET 1 OF 1

SITE: Former Hess - Port Reading
 DATE: 12/7/20
 WEATHER: 70° Sunny
 CONSULTING FIRM: EARTH SYSTEMS
 FIELD PERSONNEL: AE
 CERTIFICATION #: 13040

MONITOR WELL #: L1-4 WELL DEPTH: 8'11" SCREENED/OPEN INTERVAL: 6-8'
 WELL PERMIT #: 2600080672 WELL DIAMETER: 4" inches

PID/FID READINGS (ppm): BACKGROUND: 0.0
 BENEATH OUTER CAP: 0.0
 BENEATH INNER CAP: 0.0
 PUMP INTAKE DEPTH: 9.5 ft below TOC
 DEPTH TO WATER BEFORE PUMP INSTALLATION: 8.39 ft below TOC

TIME	PURGING	SAMPLING	pH (pH units) (SM 4500H+B)		SPECIFIC CONDUCTIVITY (mS/cm) (EPA 120.1)		REDOX POTENTIAL (mv)		DISSOLVED OXYGEN (mg/l) (SM 4500OG)		TURBIDITY (NTU) (EPA 180.1)		TEMPERATURE (degrees C) (SM 2550)		PUMPING RATE (ml/min)	DEPTH TO WATER (ft below TOC)
			READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*		
10:30	X		7.00	NA	0.307	NA	45	NA	5.13	NA	7.4	NA	21.40	NA		8.94
10:35	X		6.87	0.13	0.310	0.9%	11	34	4.30	16%	6.9	6%	21.53			8.55
10:40	X		6.89	0.02	0.310	0%	8	3	4.11	4.4%	6.8	1%	21.71			8.67
10:45	X		6.91	0.02	0.311	1%	-26	-18	3.82	7%	9.0	32%	21.78			8.77
10:50	X		6.92	0.01	0.310	1%	-28	-2	3.68	3.6%	6.5	27%	21.98			8.86
10:55	X		6.93	0.01	0.308	0.6%	-24	-4	4.07	10.5%	6.8	4.6%	22.04	0.2%		
11:00	X		6.92	0.01	0.307	1%	-15	-9	4.07	0.4%	6.3	7.3%	21.87	0.7%		
11:05	X		6.92	0.00	0.306	1%	-7	-8	3.99	2.4%	6.0	4.7%	21.94			
11:10	X		6.92	0.00	0.305	1%	-3	-4	3.93	1.5%	5.7	5%	21.97			
11:15	X		6.92	0.00	0.305	0%	4	7	3.85	2.0%	5.5	3.5%	21.00			

COMMENTS:

*INDICATOR PARAMETERS HAVE STABILIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN: ± 0.1 for pH; $\pm 3\%$ for Specific Conductivity and Temperature;
 ± 10 mv for Redox Potential; and $\pm 10\%$ for Dissolved Oxygen and Turbidity

Earth Systems

Environmental Engineering

LOW FLOW SAMPLING DATA SHEET

SHEET 1 OF 1

SITE: Former Hess - Port Reading

DATE: 10/7/20

WEATHER: SUNNY 70°F

CONSULTING FIRM: EARTH SYSTEMS

FIELD PERSONNEL: KS

CERTIFICATION #: 13040

MONITOR WELL #: BG-2
WELL PERMIT #: 2600008130

WELL DEPTH: 42' 4"
WELL DIAMETER: 4" inches

SCREENED/OPEN INTERVAL: 42' 0" - 4-9'

PID/FID READINGS (ppm):
BACKGROUND: 0.0
BENEATH OUTER CAP: 0.0
BENEATH INNER CAP: 0.0

PUMP INTAKE DEPTH: 5.5' ft below TOC

DEPTH TO WATER BEFORE PUMP INSTALLATION: 2.75' ft below TOC

TIME	PURGING	SAMPLING	pH (pH units) (SM 4500H-B)		SPECIFIC CONDUCTIVITY (mS/cm) (EPA 120.1)		REDOX POTENTIAL (mv)		DISSOLVED OXYGEN (mg/l) (SM 4500OG)		TURBIDITY (NTU) (EPA 180.1)		TEMPERATURE (degrees C) (SM 2550)		PUMPING RATE (ml/min)	DEPTH TO WATER (ft below TOC)
			READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*		
12:30	X		7.12	NA	0.124	NA	-10	NA	0.10	NA	32.6	NA	26.55	NA	250	3.20
12:35	X		6.66	0.46	0.148	20%	-14	4	0.10	0%	31.4	3.6%	26.68	0.5%	250	3.34
12:40	X		6.52	0.14	0.170	15%	-36	22	0.10	0%	30.6	2.5%	26.75	0.3%	250	3.45'
12:45	X		6.48	0.04	0.180	5.8%	-44	7	0.10	0%	31.1	1.6%	26.83	0.3%	250	3.52'
12:50	X		6.41	0.07	0.183	1.6%	-47	3	0.10	0%	30.6	1.6%	26.92	0.5%	250	3.60'
12:55	X		6.37	0.04	0.183	0.0%	-47	0	0.10	0%	31.0	1.2%	27.10	0.5%	250	3.67'
13:00	X		6.30	0.07	0.186	1.6%	-45	2	0.10	0%	31.7	2.2%	27.16	0.2%	250	3.70'
13:05	X		6.25	0.05	0.190	2.0%	-44	1	0.10	0%	31.0	2.2%	27.17	0.0	250	3.80'

COMMENTS:

*INDICATOR PARAMETERS HAVE STABILIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN: ± 0.1 for pH; ± 3% for Specific Conductivity and Temperature; ± 10 mv for Redox Potential; and ± 10% for Dissolved Oxygen and Turbidity

LOW FLOW SAMPLING DATA SHEET

SHEET ____ OF ____

SITE: <u>Formo Hess- Port Realings</u> DATE: <u>10/7/2020</u> WEATHER: <u>72° Sunny</u>	CONSULTING FIRM: <u>EARTH SYSTEMS</u> FIELD PERSONNEL: <u>AE</u> CERTIFICATION #: <u>13040</u>
--	---

MONITOR WELL #: <u>B6-3</u>	WELL DEPTH: <u>12'</u>	SCREENED/OPEN INTERVAL: <u>7-12'</u>
WELL PERMIT #: <u>2600011432</u>	WELL DIAMETER: <u>4</u> Inches	

PID/FID READINGS (ppm): BACKGROUND: <u>0.0</u> BENEATH OUTER CAP: <u>0.0</u> BENEATH INNER CAP: <u>0.0</u>	PUMP INTAKE DEPTH: <u>9.5'</u> ft below TOC DEPTH TO WATER BEFORE PUMP INSTALLATION: <u>4.93</u> ft below TOC
---	--

TIME	PURGING	SAMPLING	pH (pH units) (SM 4500H+B)		SPECIFIC CONDUCTIVITY (mS/cm) (EPA 120.1)		REDOX POTENTIAL (mv)		DISSOLVED OXYGEN (mg/l) (SM 4500OG)		TURBIDITY (NTU) (EPA 180.1)		TEMPERATURE (degrees C) (SM 2550)		PUMPING RATE (ml/min)	DEPTH TO WATER (ft below TOC)
			READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*		
1205	X		6.80	NA	0.290	NA	84	NA	3.94	NA	69.0	NA	20.24	NA	330	5.41
1210	X		6.66	0.14	0.312	25%	6	78	3.14	20%	67.0	3%	20.15	1%		5.46
1215	X		6.68	0.02	0.329	5.4%	-34	28	3.20	2%	60.4	10%	20.21	1%		5.50
1220	X		6.69	0.01	0.334	1.5%	-42	8	3.01	6%	60.4	-	20.32	1%		5.56
1225	X		6.71	0.02	0.342	2.3%	-51	8	2.65	11%	57.2	5%	20.42	1%		5.62
1230	X		6.74	0.03	0.350	2.3%	-60	8	2.44	8%	52.1	9%	20.62	1%		5.63
1235	X		6.74	-	0.358	2.2%	-64	4	2.21	9%	49.2	6%	20.59	1%		
1240	X		6.75	0.01	0.361	0.8%	-66	2	2.08	6%	45.1	8%	20.58	1%		
1245	X		6.75	-	0.370	2.4%	-70	4	1.95	6%	43.5	4%	20.56	1%		

COMMENTS:

*INDICATOR PARAMETERS HAVE STABILIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN: ± 0.1 for pH; ± 3% for Specific Conductivity and Temperature;
 ± 10 mv for Redox Potential; and ± 10% for Dissolved Oxygen and Turbidity

APPENDIX B

Electronic Data Deliverables

Mike Piegaro

From: DEP SRPEDD <SRPEDD@dep.nj.gov>
Sent: Tuesday, January 26, 2021 6:29 PM
To: Mike Piegaro
Subject: 006148, RPC000002, E20130449, HB263444, (Directory: JD17077) - Passed
Attachments: DTST.TXT; erdtst-7-1-8.txt; erresult-7-1-8.txt; ersample-7-1-8.txt; HZRESULT.TXT; HZSAMPLE.TXT; rstp-7-1-8.txt

The EDD submission via email from (mpiegaro@earthsys.net) on (1/26/2021 1:17:56 PM) with the subjectline "[EXTERNAL] Re: PI# 006148, SRP ID E20130449"

The following identifiers were in the DTST file:

- Directory: JD17077
- DESC: Former Hess PR Terminal- Annual GW 1
- SRPID: E20130449
- Submit Date: 1/26/2021

This submission has been issued an SRP Catalog ID: HB263444

Submission status: **Passed.**

Please do **not** resubmit.

EDD data deliverable must be submitted only once.

- To fulfill Key Document requirements attach only a copy of this email as an appendix to the document.
- Do **not** resubmit any approved EDD deliverable as part of a portal submission.

Email ID: OEM_57476
Sub ID: SUB_499151

Mike Piegaro

From: DEP SRPEDD <SRPEDD@dep.nj.gov>
Sent: Tuesday, January 26, 2021 6:28 PM
To: Mike Piegaro
Subject: 006148, RPC000002, E20130449, HB263443, (Directory: JD17100) - Passed
Attachments: DTST.TXT; erdtst-7-1-8.txt; erresult-7-1-8.txt; ersample-7-1-8.txt; HZRESULT.TXT; HZSAMPLE.TXT; rstp-7-1-8.txt

The EDD submission via email from (mpiegaro@earthsys.net) on (1/26/2021 1:19:11 PM) with the subjectline "[EXTERNAL] re: PI 006148, SRP ID E20130449"

The following identifiers were in the DTST file:

- Directory: JD17100
- DESC: Former Hess PR Terminal- Annual GW 2
- SRPID: E20130449
- Submit Date: 1/26/2021

This submission has been issued an SRP Catalog ID: HB263443

Submission status: **Passed.**

Please do **not** resubmit.

EDD data deliverable must be submitted only once.

- To fulfill Key Document requirements attach only a copy of this email as an appendix to the document.
- Do **not** resubmit any approved EDD deliverable as part of a portal submission.

Email ID: OEM_57475
Sub ID: SUB_499140

Mike Piegaro

From: DEP SRPEDD <SRPEDD@dep.nj.gov>
Sent: Tuesday, January 26, 2021 6:28 PM
To: Mike Piegaro
Subject: 006148, RPC000002, E20130449, HB263442, (Directory: JD17122) - Passed
Attachments: DTST.TXT; erdtst-7-1-8.txt; erresult-7-1-8.txt; ersample-7-1-8.txt; HZRESULT.TXT; HZSAMPLE.TXT; rstp-7-1-8.txt

The EDD submission via email from (mpiegaro@earthsys.net) on (1/26/2021 1:20:21 PM) with the subjectline "[EXTERNAL] re: PI 006148, SRP ID E20130449"

The following identifiers were in the DTST file:

- Directory: JD17122
- DESC: Former Hess PR Terminal- Annual GW 3
- SRPID: E20130449
- Submit Date: 1/26/2021

This submission has been issued an SRP Catalog ID: HB263442

Submission status: **Passed.**

Please do **not** resubmit.

EDD data deliverable must be submitted only once.

- To fulfill Key Document requirements attach only a copy of this email as an appendix to the document.
- Do **not** resubmit any approved EDD deliverable as part of a portal submission.

Email ID: OEM_57474
Sub ID: SUB_499129

Mike Piegaro

From: DEP SRPEDD <SRPEDD@dep.nj.gov>
Sent: Tuesday, January 26, 2021 6:27 PM
To: Mike Piegaro
Subject: 006148, RPC000002, E20130449, HB263440, (Directory: JD17184) - Passed
Attachments: DTST.TXT; erdtst-7-1-8.txt; erresult-7-1-8.txt; ersample-7-1-8.txt; HZRESULT.TXT; HZSAMPLE.TXT; rstp-7-1-8.txt

The EDD submission via email from (mpiegaro@earthsys.net) on (1/26/2021 1:21:36 PM) with the subjectline "[EXTERNAL] re: PI 006148, SRP ID E20130449"

The following identifiers were in the DTST file:

- Directory: JD17184
- DESC: Former Hess PR Terminal- Annual GW 4
- SRPID: E20130449
- Submit Date: 1/26/2021

This submission has been issued an SRP Catalog ID: HB263440

Submission status: **Passed.**

Please do **not** resubmit.

EDD data deliverable must be submitted only once.

- To fulfill Key Document requirements attach only a copy of this email as an appendix to the document.
- Do **not** resubmit any approved EDD deliverable as part of a portal submission.

Email ID: OEM_57472
Sub ID: SUB_499109

Mike Piegaro

From: DEP SRPEDD <SRPEDD@dep.nj.gov>
Sent: Tuesday, January 26, 2021 6:26 PM
To: Mike Piegaro
Subject: 006148, RPC000002, E20130449, HB263439, (Directory: JD17345) - Passed
Attachments: DTST.TXT; erdtst-7-1-8.txt; erresult-7-1-8.txt; ersample-7-1-8.txt; HZRESULT.TXT; HZSAMPLE.TXT; rstp-7-1-8.txt

The EDD submission via email from (mpiegaro@earthsys.net) on (1/26/2021 1:22:49 PM) with the subjectline "[EXTERNAL] re: PI 006148, SRP ID E20130449"

The following identifiers were in the DTST file:

- Directory: JD17345
- DESC: Former Hess PR Terminal- Annual GW 5
- SRPID: E20130449
- Submit Date: 1/26/2021

This submission has been issued an SRP Catalog ID: HB263439

Submission status: **Passed.**

Please do **not** resubmit.

EDD data deliverable must be submitted only once.

- To fulfill Key Document requirements attach only a copy of this email as an appendix to the document.
- Do **not** resubmit any approved EDD deliverable as part of a portal submission.

Email ID: OEM_57471
Sub ID: SUB_499098

Mike Piegaro

From: DEP SRPEDD <SRPEDD@dep.nj.gov>
Sent: Tuesday, January 26, 2021 6:26 PM
To: Mike Piegaro
Subject: 006148, RPC000002, E20130449, HB263438, (Directory: JD17470) - Passed
Attachments: DTST.TXT; erdtst-7-1-8.txt; erresult-7-1-8.txt; ersample-7-1-8.txt; HZRESULT.TXT; HZSAMPLE.TXT; rstp-7-1-8.txt

The EDD submission via email from (mpiegaro@earthsys.net) on (1/26/2021 1:24:17 PM) with the subjectline "[EXTERNAL] re: PI 006148, SRP ID E20130449"

The following identifiers were in the DTST file:

- Directory: JD17470
- DESC: Former Hess PR Terminal- Annual GW 6
- SRPID: E20130449
- Submit Date: 1/26/2021

This submission has been issued an SRP Catalog ID: HB263438

Submission status: **Passed.**

Please do **not** resubmit.

EDD data deliverable must be submitted only once.

- To fulfill Key Document requirements attach only a copy of this email as an appendix to the document.
- Do **not** resubmit any approved EDD deliverable as part of a portal submission.

Email ID: OEM_57470
Sub ID: SUB_499086

Mike Piegaro

From: DEP SRPEDD <SRPEDD@dep.nj.gov>
Sent: Tuesday, January 26, 2021 6:25 PM
To: Mike Piegaro
Subject: 006148, RPC000002, E20130449, HB263437, (Directory: JD17516) - Passed
Attachments: DTST.TXT; erdtst-7-1-8.txt; erresult-7-1-8.txt; ersample-7-1-8.txt; HZRESULT.TXT; HZSAMPLE.TXT; rstp-7-1-8.txt

The EDD submission via email from (mpiegaro@earthsys.net) on (1/26/2021 1:25:44 PM) with the subjectline "[EXTERNAL] re: PI 006148, SRP ID E20130449"

The following identifiers were in the DTST file:

- Directory: JD17516
- DESC: Former Hess PR Terminal- Annual GW 7
- SRPID: E20130449
- Submit Date: 1/26/2021

This submission has been issued an SRP Catalog ID: HB263437

Submission status: **Passed.**

Please do **not** resubmit.

EDD data deliverable must be submitted only once.

- To fulfill Key Document requirements attach only a copy of this email as an appendix to the document.
- Do **not** resubmit any approved EDD deliverable as part of a portal submission.

Email ID: OEM_57469
Sub ID: SUB_499075

Mike Piegaro

From: DEP SRPEDD <SRPEDD@dep.nj.gov>
Sent: Tuesday, January 26, 2021 6:24 PM
To: Mike Piegaro
Subject: 006148, RPC000002, E20130449, HB263436, (Directory: JD17665) - Passed
Attachments: DTST.TXT; erdtst-7-1-8.txt; erresult-7-1-8.txt; ersample-7-1-8.txt; HZRESULT.TXT; HZSAMPLE.TXT; rstp-7-1-8.txt

The EDD submission via email from (mpiegaro@earthsys.net) on (1/26/2021 1:27:54 PM) with the subjectline "[EXTERNAL] re: PI 006148, SRP ID E20130499"

The following identifiers were in the DTST file:

- Directory: JD17665
- DESC: Former Hess PR Terminal- Annual GW 9
- SRPID: E20130449
- Submit Date: 1/26/2021

This submission has been issued an SRP Catalog ID: HB263436

Submission status: **Passed.**

Please do **not** resubmit.

EDD data deliverable must be submitted only once.

- To fulfill Key Document requirements attach only a copy of this email as an appendix to the document.
- Do **not** resubmit any approved EDD deliverable as part of a portal submission.

Email ID: OEM_57468
Sub ID: SUB_499064

Mike Piegaro

From: DEP SRPEDD <SRPEDD@dep.nj.gov>
Sent: Tuesday, January 26, 2021 6:24 PM
To: Mike Piegaro
Subject: 006148, RPC000002, E20130449, HB263435, (Directory: JD17774) - Passed
Attachments: DTST.TXT; erdtst-7-1-8.txt; erresult-7-1-8.txt; ersample-7-1-8.txt; HZRESULT.TXT; HZSAMPLE.TXT; rstp-7-1-8.txt

The EDD submission via email from (mpiegaro@earthsys.net) on (1/26/2021 1:29:03 PM) with the subjectline "[EXTERNAL] re: PI 006148, SRP ID E20130449"

The following identifiers were in the DTST file:

- Directory: JD17774
- DESC: Former Hess PR Terminal- Annual GW 10
- SRPID: E20130449
- Submit Date: 1/26/2021

This submission has been issued an SRP Catalog ID: HB263435

Submission status: **Passed.**

Please do **not** resubmit.

EDD data deliverable must be submitted only once.

- To fulfill Key Document requirements attach only a copy of this email as an appendix to the document.
- Do **not** resubmit any approved EDD deliverable as part of a portal submission.

Email ID: OEM_57467
Sub ID: SUB_499053

Mike Piegaro

From: DEP SRPEDD <SRPEDD@dep.nj.gov>
Sent: Tuesday, January 26, 2021 6:23 PM
To: Mike Piegaro
Subject: 006148, RPC000002, E20130449, HB263434, (Directory: JD17888) - Passed
Attachments: DTST.TXT; erdtst-7-1-8.txt; erresult-7-1-8.txt; ersample-7-1-8.txt; HZRESULT.TXT; HZSAMPLE.TXT; rstp-7-1-8.txt

The EDD submission via email from (mpiegaro@earthsys.net) on (1/26/2021 1:30:21 PM) with the subjectline "[EXTERNAL] re: PI 006148, SRP ID E20130449"

The following identifiers were in the DTST file:

- Directory: JD17888
- DESC: Former Hess PR Terminal - Annual GW 11
- SRPID: E20130449
- Submit Date: 1/26/2021

This submission has been issued an SRP Catalog ID: HB263434

Submission status: **Passed.**

Please do **not** resubmit.

EDD data deliverable must be submitted only once.

- To fulfill Key Document requirements attach only a copy of this email as an appendix to the document.
- Do **not** resubmit any approved EDD deliverable as part of a portal submission.

Email ID: OEM_57466
Sub ID: SUB_499042

Mike Piegaro

From: DEP SRPEDD <SRPEDD@dep.nj.gov>
Sent: Tuesday, January 26, 2021 6:23 PM
To: Mike Piegaro
Subject: 006148, RPC000002, E20130449, HB263433, (Directory: JD17655) - Passed
Attachments: DTST.TXT; erdtst-7-1-8.txt; erresult-7-1-8.txt; ersample-7-1-8.txt; HZRESULT.TXT; HZSAMPLE.TXT; rstp-7-1-8.txt

The EDD submission via email from (mpiegaro@earthsys.net) on (1/26/2021 1:31:25 PM) with the subjectline "[EXTERNAL] re: PI 006148, SRP ID E20130449"

The following identifiers were in the DTST file:

- Directory: JD17655
- DESC: Former Hess PR Terminal- Annual GW 8
- SRPID: E20130449
- Submit Date: 1/26/2021

This submission has been issued an SRP Catalog ID: HB263433

Submission status: **Passed.**

Please do **not** resubmit.

EDD data deliverable must be submitted only once.

- To fulfill Key Document requirements attach only a copy of this email as an appendix to the document.
- Do **not** resubmit any approved EDD deliverable as part of a portal submission.

Email ID: OEM_57465
Sub ID: SUB_499031

Mike Piegaro

From: DEP SRPEDD <SRPEDD@dep.nj.gov>
Sent: Tuesday, January 26, 2021 6:21 PM
To: Mike Piegaro
Subject: 006148, RPC000002, E20130449, HB263429, (Directory: JD10090) - Passed
Attachments: DTST.TXT; erdtst-7-1-8.txt; erresult-7-1-8.txt; ersample-7-1-8.txt; HZRESULT.TXT; HZSAMPLE.TXT; rstp-7-1-8.txt

The EDD submission via email from (mpiegaro@earthsys.net) on (1/26/2021 1:33:10 PM) with the subjectline "[EXTERNAL] re: PI 006148, SRP ID E20130449"

The following identifiers were in the DTST file:

- Directory: JD10090
- DESC: Former Hess North LF, July GW
- SRPID: E20130449
- Submit Date: 1/26/2021

This submission has been issued an SRP Catalog ID: HB263429

Submission status: **Passed.**

Please do **not** resubmit.

EDD data deliverable must be submitted only once.

- To fulfill Key Document requirements attach only a copy of this email as an appendix to the document.
- Do **not** resubmit any approved EDD deliverable as part of a portal submission.

Email ID: OEM_57461
Sub ID: SUB_499020

Mike Piegaro

From: DEP SRPEDD <SRPEDD@dep.nj.gov>
Sent: Tuesday, January 26, 2021 6:21 PM
To: Mike Piegaro
Subject: 006148, RPC000002, E20130449, HB263427, (Directory: JD10216) - Passed
Attachments: DTST.TXT; erdtst-7-1-8.txt; erresult-7-1-8.txt; ersample-7-1-8.txt; HZRESULT.TXT; HZSAMPLE.TXT; rstp-7-1-8.txt

The EDD submission via email from (mpiegaro@earthsys.net) on (1/26/2021 1:34:52 PM) with the subjectline "[EXTERNAL] Re: PI 006148, SRP ID E20130449"

The following identifiers were in the DTST file:

- Directory: JD10216
- DESC: Former Hess No. 1 LF, July GW
- SRPID: E20130449
- Submit Date: 1/26/2021

This submission has been issued an SRP Catalog ID: HB263427

Submission status: **Passed.**

Please do **not** resubmit.

EDD data deliverable must be submitted only once.

- To fulfill Key Document requirements attach only a copy of this email as an appendix to the document.
- Do **not** resubmit any approved EDD deliverable as part of a portal submission.

Email ID: OEM_57459
Sub ID: SUB_499009

Mike Piegaro

From: DEP SRPEDD <SRPEDD@dep.nj.gov>
Sent: Tuesday, January 26, 2021 6:16 PM
To: Mike Piegaro
Subject: 006148, RPC000002, E20130449, HB263416, (Directory: JD10277) - Passed
Attachments: DTST.TXT; erdtst-7-1-8.txt; erresult-7-1-8.txt; ersample-7-1-8.txt; HZRESULT.TXT; HZSAMPLE.TXT; rstp-7-1-8.txt

The EDD submission via email from (mpiegaro@earthsys.net) on (1/26/2021 1:36:28 PM) with the subjectline "[EXTERNAL] re: PI 006148, SRP ID E20130449"

The following identifiers were in the DTST file:

- Directory: JD10277
- DESC: Former Hess South LF, July GW
- SRPID: E20130449
- Submit Date: 1/26/2021

This submission has been issued an SRP Catalog ID: HB263416

Submission status: **Passed.**

Please do **not** resubmit.

EDD data deliverable must be submitted only once.

- To fulfill Key Document requirements attach only a copy of this email as an appendix to the document.
- Do **not** resubmit any approved EDD deliverable as part of a portal submission.

Email ID: OEM_57448
Sub ID: SUB_498998

Mike Piegaro

From: DEP SRPEDD <SRPEDD@dep.nj.gov>
Sent: Tuesday, January 26, 2021 6:11 PM
To: Mike Piegaro
Subject: 006148, RPC000002, E20130449, HB263403, (Directory: JD14256) - Passed
Attachments: DTST.TXT; erdtst-7-1-8.txt; erresult-7-1-8.txt; ersample-7-1-8.txt; HZRESULT.TXT; HZSAMPLE.TXT; rstp-7-1-8.txt

The EDD submission via email from (mpiegaro@earthsys.net) on (1/26/2021 1:38:01 PM) with the subjectline "[EXTERNAL] re: PI 006148 SRP ID E20130449"

The following identifiers were in the DTST file:

- Directory: JD14256
- DESC: Former Hess North LF, Oct GW
- SRPID: E20130449
- Submit Date: 1/26/2021

This submission has been issued an SRP Catalog ID: HB263403

Submission status: **Passed.**

Please do **not** resubmit.

EDD data deliverable must be submitted only once.

- To fulfill Key Document requirements attach only a copy of this email as an appendix to the document.
- Do **not** resubmit any approved EDD deliverable as part of a portal submission.

Email ID: OEM_57435
Sub ID: SUB_498987

Mike Piegaro

From: DEP SRPEDD <SRPEDD@dep.nj.gov>
Sent: Tuesday, January 26, 2021 6:11 PM
To: Mike Piegaro
Subject: 006148, RPC000002, E20130449, HB263402, (Directory: JD1448) - Passed
Attachments: DTST.TXT; erdtst-7-1-8.txt; erresult-7-1-8.txt; ersample-7-1-8.txt; HZRESULT.TXT; HZSAMPLE.TXT; rstp-7-1-8.txt

The EDD submission via email from (mpiegaro@earthsys.net) on (1/26/2021 1:39:16 PM) with the subjectline "[EXTERNAL] re: PI 006148, SRP ID E20130449"

The following identifiers were in the DTST file:

- Directory: JD1448
- DESC: Former Hess South LF, Oct GW
- SRPID: E20130449
- Submit Date: 1/26/2021

This submission has been issued an SRP Catalog ID: HB263402

Submission status: **Passed.**

Please do **not** resubmit.

EDD data deliverable must be submitted only once.

- To fulfill Key Document requirements attach only a copy of this email as an appendix to the document.
- Do **not** resubmit any approved EDD deliverable as part of a portal submission.

Email ID: OEM_57434
Sub ID: SUB_498976

APPENDIX C
Analytical Data Packages
(electronic only)